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BULLETIN

OF

THE NEW YORK ACADEMY OF MEDICINE

APRIL, 1928

INSTITUTED 1847

PUBLISHED MONTHLY BY
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EDITORIAL

A NEGLECTED MEDICAL SCHOLAR

It has long been known, to a relatively small group of cognoscenti, that the most considerable *Arbeit* in medical history which has yet come out of Great Britain was the work of a man condemned to a bizarre sort of professional ostracism, "sent to Coventry," in fact, not for any specific crime or misdemeanor, but for certain heterodox opinions which he maintained with obstinacy until the end of his life. So completely had the world passed him by that when he died few, even of those who knew him, realized that he had lived on into our period. Since his death, on June 18, 1927, there has been a swift change of front and, in an astonishingly short while, the two volumes of Charles Creighton's *History of Epidemics in Britain* (1891-4) have gone up in price and are eagerly sought for by collectors, if only as museum specimens of the typographer's art.[1] A critical examination of these volumes, which bear the *imprimatur* of the Cambridge University Press, will convince any candid and competent reader that their just reputation has suffered no *capitis diminutio* to date, that in all these 1589 pages of beautiful printing there is not a single typographic error of consequence (if any), while the dates and bibliographic references still bear the current acid tests (from whatever angle) with equanimity. Here, in fact, are calm, unruffled seas of accuracy upon which the amateur may float his pinnace with reasonable

[1] Bulloch says that the volumes were eventually unloaded on the market as "remainders" and could be picked up in the London book-stalls for a few shillings (*Lancet*, Lon., 1927, i, 250).

security from shipwreck and from the depths of which various divers have dredged up treasurer-trove not usually credited to the ill-starred author. But it is not merely as a source-book and storehouse of knowledge that this great work is outstanding, matching up, as it does, with Haeser's third volume (basic texts of epidemiology) or the monumental work of Hirsch, from which, in a manner, it derives. Creighton's book was virtually the point of departure of the recent British school of epidemiologists and is withal a narrative of events as compelling as Robinson Crusoe or Treasure Island, assuming, naturally, that the reader's interest is equivalent to the extent of his interest in the effect of epidemics upon the weal and woe of mankind. Read in the light of the military rule "Facts, not opinions, are wanted," everything is beautifully in its place and one can put his own interpretation upon the data, in the light of current advances in science. Concern yourself, however, about Creighton's tenacity of opinion as to miasms, effluvia, vaccination or the supernatural element (*to theion*) in influenza, and you will be at sea in several senses. At this time of day, it is cheap and easy to laugh or smile at Creighton's minute analysis of the pathogeny of typhus fever, with barely a reference to lice. But not so, if we reflect that both Tobias Cober (1606) and James Lind (1773) noted the coexistence of pediculosis and typhus without perceiving the causal nexus, which had to wait upon experimental inoculation. Lind, indeed, recommended, in a brief paragraph, the most approved Western Front methods of delousing prisoners exposed to jail-fever,[2] even pointed out that baking the clothes will delouse the clothes and check the possibilities of infection, yet was capable of the following *non sequitur*: Since sulphur is an efficient fumigant for typhus-infected clothing yet will not destroy lice, "we might be led to imagine that contagion is not propagated by animalcules." It

[2] Lind: Of the jail distemper, 1773 (in his: *Essay on the Most Effectual Means of Preserving the Health of Seamen.* London, 1779, 336; 340. Of delousing by baking, he says: "This will answer two good purposes, in both removing *infection* and destroying all sorts of *vermin.*"

was Creighton who first assembled the dramatic experiences of the Black Assizes at Cambridge (1522), Oxford (1577), Exeter (1589), Taunton (1730) and particularly the old Bailey (1750), at which nearly the whole Middlesex jury, the Lord Mayor and some forty odd judges and officials on the left of the court-room were wiped out by typhus transmitted from the wretched lousy prisoners on the same side, while people on the right went unaffected; yet not a word does Creighton say of lice or of Lind's far-seeing observations of 1773.[3] Neither the lice-ridden wigs of the judges and fair ladies, nor the long-handled curry-combs these ladies employed to scratch their backs nor yet the satiric boudoir allusions of Swift, Matthew Prior and Robert Burns (*To a Louse on a Lady's Bonnet*) could awaken Lind or Creighton to what (to us) seemed staring in their faces. Their minds were closed to the idea of specific infection by living vectors, yet profiting, as we do, by the accumulated wisdom and knowledge of the past, nothing can redeem our own ignorance and impotence with reference to the great epidemic of influenza of 1918-19. "Honors are easy" to those inclined to laugh at Creighton's grave consideration of the original meaning of influenza (a mysterious "influence" in the air), of the infectious boat-cold of St. Kilda which puzzled Dr. Johnson and Boswell in the Hebrides, of mysterious colds breaking out on ships approaching a shore or among 'longshore people approached by a ship, of the coincidence of yellow fever with earthquakes or other upheavals of the soil, with but a solitary reference to mosquitoes. The true merits of Creighton are of an entirely different order. He derived his inspiration from Hirsch's *Geographical and Historical Pathology* (1883-6), which he translated for the Sydenham Society (1883-6), and his own performance was in every way worthy of the enduring model he had chosen. In both, we find the same careful assemblage and close

[3] The essential facts about louse-transmission of typhus at the Black Assizes were first brought out in the brilliant paper of Lieut. Col. MacArthur, R.A.M.C., on "Old-time Typhus in Britain:" *Tr. Roy. Soc. Trop. Med. & Hyg.*, Lond., 1927, xx: 487-503.

analysis of statistics, the same cautious, conservative handling of etiological theories, the same unimpeachable accuracy in citation and reference; but Creighton displays a feeling for the dramatic and ironic essentials in narrative writing which Hirsch does not possess. Creighton's analysis of the conditions which exposed Ireland to dysentery and typhus fever for centuries, of the transmission of these diseases by her emigrants at Bristol, Liverpool and other ports of embarkation, his sly observations on the statistics of pock-marked faces among the great ladies of the 17th century, on the endemic status of smallpox in England and the role of improved sanitation as a coefficient in its decline, his derivations of the words "measles," "pox," "influenza," "dengue," his exegesis of Sydenham's cooling regime in smallpox, are all original with himself, the honest products of a vigorous, tenacious, extremely active mind. Could anything be more definitive, conclusive, effective and to the point than his re-enforcement of John Hunter's sally as to the supposed American or Columbian origin of syphilis?

"There never was any considerable body of facts, consistent as regards times and places, in support of that theory; and, on antecedent grounds, the objection to it was that it is as difficult, to say the least, to conceive of the origin of such a disease among the savages of Hispaniola as among the natives of Europe. 'Here or nowhere is America' is the proper retort to all such visionary theories put upon the distant and the unknown. The American theory is now hopelessly dead; the more that the New World became known, the less did syphilis appear to be indigenous to it: indeed the disease followed the track of Europeans, and those parts of the American continent, north and south of the Isthmus, which were longest in being reached by the civilisation of the Old World, were also longest in being reached by the lues venerea." [4]

Sudhoff, Sigerist and other historians have adduced a convincing array of facts tending to prove that syphilis existed in Europe long before 1492, but as far as the *morbus americanus* phase of the theory goes, Creighton's brief

[4] Creighton. *History of Epidemics in Britain.* Cambridge, 1891, i: 430.

paragraph conveys the sound sense of the whole matter. As Lord Kelvin once said, in a similar relation: "It is all there: there is nothing to be added." So too, the essential data of the history of variolation, as an historic episode as far reaching in its potentialities as Jennerian vaccination, were first assembled and interpreted in the 130 pages which Creighton devotes to the subject.[5] The finishing touch, the view of variolation as the initial world-wide, century-long experiment in preventive inoculation, a view of things to which Creighton remained impervious, was added in the monograph of Klebs (1914).[6] The same debt is acknowledged in Crookshank's suggestive book on Influenza (1922) and in the views enunciated by Greenwood, Hamer and other recent English epidemiologists, who derive from Creighton. The crux of this reasoning is the pseudo-Hippocratic *to theion* (*quis divinum*)[7] which Creighton invoked in lieu of the "epidemic constitution" (*genius epidemicus*) of Baillou and Sydenham and the "cosmic and telluric influences" Pettenkofer attempted to resolve into three algebraic (x, y, z) factors.

It remains to give some brief account of the life of this remarkable medical scholar. Charles Creighton was born at Peterhead (Aberdeenshire), Scotland, and graduated from the University of Aberdeen in 1867. After taking medical degrees at Aberdeen (1871) and Edinburgh (1878), he set out on his *Wanderjahr* and spent a long time under Virchow (Berlin), Rokitansky and Skoda (Vienna). Returning to England, he was successively medical registrar at Charing Cross Hospital, surgical registrar at St. Thomas's Hospital, demonstrator of anatomy at the University of Cambridge (1877-81) and for a time worked under Burdon Sanderson in cancer research and other pathological problems. While in residence in Savile Row and New Cavendish Street (London), he at-

[5] *Ibid.*, 1894, ii: 463-593.

[6] Arnold Klebs: *Die Variolation in 18ten Jahrhundert.* Giessen, 1914.

[7] Pseudo-Hippocratic because completely at variance with the rational views of causation apparent in the authentic parts of the Canon.

tempted practice, but as might be expected in a Skoda pupil, he made nothing of it. During the period 1881-1918, he spent all his time at the British Museum and other libraries, delving for the materials of his two principal works. His translation of Hirsch (1883-6) required twelve hours work a day for three years, his book on Epidemics in Britain a similar amount of labor during 1887-94. He published several books on cancer, tuberculosis, diseases and tumors of the breast, to which he attached most importance, but these, as reflecting the dyscrasic hypothesis of his master, Rokitansky, are now forgotten. In 1887-8, came his break with British opinion on the subject of vaccination and the end of his professional career. After the war, he was pensioned by Lord Oxford and lived in retirement at Upper Bodington until his death. Creighton's unworldly character, in relation to the tragedy of his life, is best appreciated in the words of his friend, Professor William Bulloch:[8]

"He seemed to have some mental twist which prevented him seeing things as other people saw them. That he implicitly believed all that he wrote I have no doubt, and he was fearless of the consequences and honest to the point of injuring himself and his prospects. He exhibited a complete indifference to the most hostile criticism and bore no grudge. He was contented and cheerful and an admirable companion. He seemed possessed of some cacodæmon, which was entirely inimical to worldly success, for which Creighton, however, cared not a jot. Throughout life he was a poor lonely bachelor, leading a most frugal and physiological life and solely concerned in digging the claim which he had pegged out by himself and for himself. He simply could not acclimatise himself to modern theories of disease. He belonged medically to another age; he lived in a world of miasms and effluvia rather than particulate contagion in the form of bacteria. He was of the dyscrasic school of Rokitansky in pathology. But he was in no sense of the word antiquated in his learning. His knowledge was of the most modern kind and of the widest compass. Although he was familiar with all the methods of section-cutting and staining, he pinned his faith on sections cut with a razor from tissue, embedded in a 'penny dip,' and stained with ink.

[8] *Lancet*, Lond., 1927, ii, 251.

"The real tragedy of Creighton's life was connected with his views on cow-pox and vaccination. For many years he had been the intimate friend of Robertson Smith, the theologian and Arabic scholar, who was editor of the ninth edition of 'Encyclopædia Britannica.' Robertson Smith got Creighton to write for the Encyclopædia the articles on malaria, medicine, Morgagni, pathology, pellagra and vaccination. The last-named article, published in 1888, literally sealed Creighton's fate. Based on an extended study of the original data, he came to the conclusion that Jenner's work was incorrect, and that cow-pox was not as Jenner stated 'variolæ vaccinæ.' In Creighton's view, cow-pox had nothing to do with variola and was not a protective against variola. He even went further and maintained that what had been described as vaccinal syphilis was not venereal pox at all, but part and parcel of the cow-pox infection in the human being. Before the publication of the Encyclopædia article he had given evidence in a book published in 1887 that he held this view. He was at once hailed by the anti-vaccinators as a valuable recruit to their ranks and by the medical profession as a renegade to be treated with disdain and obloquy.

"Recusancy has its own disadvantages. The issue between Creighton and general professional opinion on vaccination was not thrashed out there and then, as it ought to have been. It was deemed more expedient to drop Creighton into oblivion, and if he was ever referred to at all it was only as 'Creighton the Anti-vaccinator.' All his other work was forgotten in the débacle, and he was a doomed man. He came to the front for a short time a decade later with some views on plague, which he had been enabled to study in India through some fund placed at his disposal. He could not be brought to believe that Bacillus pestis played any important part in the disease, which he regarded as merely an abstract something inherent in the soil. In his journey to the Punjab it was a peculiar pleasure for him to have stood by the Hydaspes where Alexander defeated Porus. He had no doubt that he had discovered the long-disputed site of the battle.

In person Creighton was a tall, handsome, well-preserved man—the photograph shows him at about 60 years of age. He was throughout life fond of music and was a great walker. It is a pleasure to me to try to perpetuate the memory of a learned philosopher who,

although by nature the very antithesis of myself, was a good friend. In the opinion of many he was harshly treated by the world for holding views that did not conform to standard. Perhaps this very world has become more tolerant than it was in Creighton's time, because even in his own subject there are epidemiologists who express with impunity to-day views as heterodox as those for which Creighton was pilloried and ostracised 40 years ago."

F. H. Garrison.

ANIMAL RESERVOIRS OF HUMAN DISEASE WITH SPECIAL REFERENCE TO MICROBIC VARIABILITY *

Theobald Smith

(Director of the Department of Animal Pathology of The Rockefeller Institute for Medical Research, Princeton, N. J.)

The subject assigned me, I take it, is to give you a brief summary of those human diseases which we owe to animal life and which the physician is apt to encounter from time to time in his practice or discover in the hospital and dispensary. In more general terms, I am to discuss the pathological relations between the human and animal species. Leaving aside acute poisoning due to the sting of certain insects and the bite of serpents, these relations are limited largely to the transfer or interchange of infectious and parasitic organisms. Two main groups of diseases spring from this relationship:

a. Infectious and parasitic organisms producing self-perpetuating diseases in animals may at times and under certain circumstances gain a foothold in the human subject. These diseases are as a rule not transmitted from one human being to another, either because the virus is not eliminated or else the mode of infection is peculiar. Or again, the highly developed sanitary environment of patients may prevent such transfer. Among these diseases may be mentioned anthrax, rabies, tuberculosis, Malta

*Delivered before The New York Academy of Medicine, February 16, 1928.

fever, tularemia, melioidosis, glanders, Rocky Mountain spotted fever, streptotoccus infections, various tapeworm diseases, and trichinosis.

b. Diseases due directly to biting insects and arachnids. They comprise a formidable group which hovers forbiddingly over immense areas of the world's surface otherwise highly desirable for civilized man. In addition to the major plagues such as malaria, yellow fever, typhus, sleeping sickness, and trench fever, there are various minor diseases due to insects. It may seem somewhat strained to call these animal diseases yet such they are. The protozoan parasites which they inject into the human subject belong primarily to the insects and arachnids. In them the important sexual stages for the perpetuation of the species go on. The human host is a convenient secondary culture medium for the multiplication of the vegetative stages giving rise to a large asexual progeny which withdrawn into the insect goes through the maturing sexual stages. Some of these protozoa have through this procedure sacrificed the capacity of independent existence in the insect owing to their parasitic or semiparasitic reliance on the human subject. Nevertheless all zoological evidence points to insects as the real, primary hosts. This second group of diseases I shall not further discuss, since it forms the material on which tropical medicine is built.

The animals which contribute to human disease may be divided into useful and noxious species. From a scientific viewpoint the distinction is of no value. It becomes, however, very significant when we endeavor to suppress the diseases. We may make continuous, relentless warfare on rats and mosquitoes, but the problem becomes more complex when we deal, for example, with cows as reservoirs of human diseases. Medical literature abounds in references to the possibilities of harm lurking in animal diseases, and in nearly every great epidemic of the past, animal diseases have been reported as precursors. Bold inferences were drawn from mere relations in time and space and fanciful theories have had their days, such as the one that bovine

tuberculosis was human syphilis in the cow. With the coming of scientific medicine animal diseases have taken their proper place in etiology and it may be said that in spite of our intimate association with animal life, either through direct contact, as in farm life, or indirect through foods and other animal products, and in spite of the large number and variety of infectious and parasitic diseases belonging to every species of domesticated and wild animal, so far as the latter are known, very few are transmitted to man. In fact we have only an odd lot of diseases to consider. Nevertheless they are formidable, and unheeded and neglected they would give the human race many unexpected jolts from time to time.

With one exception the diseases to which I shall refer briefly tend to occur either sporadically or in small groups. They first come to the attention of the practising physician. One acquainted with the chief clinical manifestations of these diseases may well score a point if he should be able to make an early diagnosis. Such diagnosis will be frequently tentative because a final decision will depend on bacteriological and serological tests. To direct the investigation into the right channels means half the battle won. To-day such diseases, after they have been identified, usually come under the jurisdiction of the health officer who endeavors to trace the source of the infection and eliminate it if possible. Diseases of this class new to a given region are usually ranged under some known disease at first and the erroneous diagnosis often carried along for months before it is rectified.

The object of a lecture of this kind is not fulfilled by simply detailing what is already recorded in medical writings but to point out relationships and possibilities still hidden in the future. To do this we necessarily enter the field of speculation. I think that there is perhaps too little rather than too much speculation in medical discussions to-day. The one condition not often met is that to look into the future we must be firmly planted in the present. To provide a basis for such speculation I shall briefly

give the salient characteristics of the important diseases that come within the scope of our subject.

Glanders is a dangerous and frequently fatal disease, sporadically encountered in man, which is exclusively carried by diseased horses and their relatives, the asses and mules, although it is inoculable into a large number of other animals. Before the entrance of the automobile into industrial life, glanders was not uncommon. In fact twenty-five years ago there was a fair amount of this disease traveling daily over our city streets. It caused the death of a number of scientists and their helpers in the laboratories. Medical literature is replete with details of cases in men in contact with diseased horses. The open disease in horses is readily diagnosed and the earliest stages brought out by mallein. Health boards were quite alert in stamping out the disease by killing open cases and watching those which reacted to mallein. To-day it is fairly well suppressed, thanks to the diminution of horses and the activities of Health agencies. In man the disease takes on protean characteristics from chronic lesions of the skin lasting twenty years to acute septicemic cases fatal in a few weeks. It has been repeatedly and thoroughly monographed in medical serial publications so that there is no difficulty in getting acquainted with the human side of the disease.

Bubonic and pneumonic plague. The relation of rats and certain rodents to bubonic and pneumonic plague was established fully a generation ago. Since then sporadic outbreaks of this disease have made themselves felt in widely separated territories, and during such occurrences, plague rats have regularly been found in the infected territory. In the far west of the United States other rodents, such as ground squirrels, have been found dangerous carriers. The microbe is one of a large group infesting the respiratory tract of the lower animals but singled out by its fierce onslaught on the human species. It is well known that the bubonic form of plague is not readily passed from man to man, probably owing to the fact that the mode of

introduction of the human virus into a fresh wound would rarely occur. The diseased rat aided by the bite of the rat flea provides the necessary mechanism between rat and man. On the other hand the pneumonic form may be transmitted like other respiratory infectious agents directly. Originally derived from a rodent of woodchuck type, it becomes a genuine human plague. The Black Death of the Middle Ages is generally identified with the pneumonic type of plague.

Malta or undulant fever. Since the great war attention has been called by clinicians to an affection appearing in our midst sporadically and usually in isolated cases which is characterized by prolonged fever without recognizable local manifestations. Its similarity to Malta fever, traced by Bruce and co-workers nearly forty years ago to goat's milk around the Mediterranean where this beverage is used extensively in place of cow's milk, has been emphasized. From the greater number of recent cases a bacillus has been obtained from the blood which closely resembles *Bacillus melitensis,* or *Brucella* as it has been recently renamed in honor of Bruce, the first to cultivate the organism from the goat. In 1918, Alice Evans while studying the bacteria in cow's milk showed that *B. melitensis* was closely related to *B. abortus* from the cow. Although the former had been isolated in 1889 and the latter, by Bang, in 1897, the close relationship of the two was not pointed out until twenty years later. This condition may be ascribed to the fact that the two streams of information resulting from investigations in human and animal pathology rarely mingle.

The appearance of an undulant type of fever in man in our midst associated with an organism up to the present not distinguishable by routine bacteriological and serological methods from either *B. melitensis* or *B. abortus* raises many important problems which cannot be reviewed at this time and which demand more detailed study. The situation may be briefly defined as follows. There are at present three different hosts of *Brucella,* the goat, the pig

and the cow. The bovine organism has been thoroughly studied; the pig organism much less thoroughly. The goat organism, known to exist among goats in southern Europe and in several southern states in this country, is still to be comparatively studied, as coming directly from goat's milk. Only through an extensive comparative investigation of these three races of *Brucella* will the problem of human undulant fever be solved. Among fifteen human strains so far examined I find at least three varieties and none agreeing in all cultural characters with the bovine type. It may be claimed that the latter is modified by passage through man, but in default of the actual human experiment, this gap in our knowledge can only be filled by continued cumulative study of accessible material. The burden of proof still rests upon those who claim that the bovine type of *Brucella* produces undulant fever in man. Bacteriologists working with cultures of Malta fever are frequently laid low with the disease in spite of the usual care observed in bacteriological laboratories. On the other hand *B. abortus* from the cow has been under investigation for more than a quarter century the world over without being suspected of producing any febrile conditions in laboratory workers who have not protected themselves in any special manner. Moreover veterinarians coming directly in contact with the diseased tissues in their daily practice have not presented any grievances against the bovine bacillus.

In 1912 Whitmore, an Englishman working in the Far East, called attention to a bacillus which may be destined to play an important role in world history. The bacillus has characters reminding one in turn of the typhoid bacillus, of proteus and of glanders, but it is not like any of these. It may be a highly generalized type from which those mentioned have sprung. Since 1912, the disease it induces has been encountered spontaneously in rats, guinea-pigs, rabbits, cats, dogs and a horse. Up to 1924, the human disease was localized in Rangoon, Burma, and the Straits Settlement. Fifty cases have been studied, of

which forty-eight have died. The two survivors are chronically diseased. The human disease resembles in some respects acute septicemia or cholera or glanders, according to the cases observed. Diagnosis was made in most instances after death, since the cases were regarded as known human diseases during life. Owing to the variety of localizations the bacillus has been isolated from sputum, local ulcers, urine and the blood during life. The rat may be the true carrier and disseminator.

Tularemia. This disease has been the theme of a recent lecture by Dr. Edward Francis who has devoted much attention to a study of its distribution in the United States and the modes of transfer. I am therefore restricting my remarks to some of the salient points in its natural history. It is essentially a disease of rodents and was discovered in 1912 by Drs. McCoy and Chapin in California ground squirrels. Two years later Wherry and Lamb described the first case in man. In 1919, Dr. Francis studied a small group of cases in farmers, in Utah, and traced the infection to jack rabbits. He also showed the ready transmissibility of the virus through the mechanical agency of various insects and mites living on or drawing blood from diseased animals. The clinical manifestations following infection consist of inflammation and suppuration of the regional lymph nodes, and fever lasting some days and after an intermission returning. Convalescence is slow. The mortality may be high in certain outbreaks. Laboratory workers are prone to contract the disease. The disease has been reported from all parts of the United States and is generally due to handling the carcasses of wild rabbits, such as skinning and preparing them for food. Within a few years, several cases of the human disease have been reported from Japan and the disease identified by Francis as tularemia.

Rat-bite fever. This disease has been definitely associated with the bite of rats in widely separated countries, among them Japan, Mexico, Scotland and the United

States. The wild rat during the biting introduces into the wound a spirillum, possibly also other organisms, in the saliva. The disease in man is characterized by a relapsing type of fever with an inflammatory reaction round the wound, enlargement of regional lymph nodes, and a macular, erythematous eruption. The clinical reports vary in details and minor particulars but fundamentally they are alike. The spirillum when inoculated in infected blood multiplies in the rat, guinea-pig and rabbit. In the rat and guinea-pig conjunctivitis and keratitis are observed and it has been suggested that the saliva of the rat is infected by the conjunctival discharges.

Infectious jaundice or Weil's disease. We are indebted to the rat for another characteristic human disease, which like rat-bite fever has a world-wide distribution. Infectious jaundice has played a prominent role among soldiers in various wars of the 19th century. The relation of the rat to this disease and the causal agent, a spiral organism, *Leptospira icterohemorrhagiae* were demonstrated by Japanese scientists in 1916. The disease is characterized by sudden onset of fever, severe muscular pains, and jaundice usually on the fourth day. Hemorrhages are usually present. Albuminuria is frequently observed. A second elevation of temperature, known as after-fever, may occur after subsidence of the first febrile reaction.

The foregoing group of disease, although differing widely etiologically, have in common the sudden onset with fever. They also are blood diseases in so far as the infectious agent may be recovered from the blood during life. Localizations, either primary or secondary, are frequent, and when primary, the regional lymph nodes are involved. The mortality is low, if we except melioidosis in which it appears to be very high. There is furthermore the relapsing character of the fever common to most of them. The entire symptomatology indicates a lack of stability of the microörganism in the foreign host, accompanied however

with a high invasiveness and persistence. Widely different from one another are the following highly important animal diseases transmissible to man:

Anthrax. The anthrax bacillus has always been a classic to the bacteriologist since it was the first microbe actually seen in the blood of affected animals and also the one with which Koch over fifty years ago began his career and Pasteur gained recognition through his now celebrated anthrax vaccine. The disease is always treated in clinical and pathological texts and I need not delay on it. The bacillus is quite a universal agent, since it attacks horses, sheep, and cattle, and perhaps many wild species on pastures. The dangerous factor in its makeup is the spore which survives in a dry condition many years. I have myself kept dried spores eight years and found them making abundant growth overnight when placed in suitable culture media. The wool, hairs, bristles and hides of domestic animals are dangerous vehicles of these spores and governments have been trying for many years to devise successful disinfectants which will not materially injure these articles of commerce and industry. Inasmuch as there is no evidence that healthy animals carry the infectious agent the danger to human beings is very slight, provided the governments do their duty in not allowing the products coming from animals dead of anthrax to enter commerce at all or at least without adequate disinfection.

Rabies, like anthrax, has a wide spread among animal victims and almost all mammals tried have been found inoculable. The real distributors, however, are limited to the species that bite, the dog and wolf. Casual transmission by other rabid animals may occur through their saliva but this is rare. There is no other disease known with such inclusive powers to infect and cause fatal disease. Here also Pasteur's genius has provided a defense in his method of vaccination. The increasing extent and intensity of rabies among dogs in densely populated territories over the entire globe have stimulated efforts to provide some protective measures for dogs with a modified

Pasteur vaccine. Such procedure is now being tried in certain communities but without the scientific centralized oversight which such an important practical experiment demands. The great international importance of rabies is expressed in the International Conference on Rabies held in Paris in 1927, during which all the various procedures used on human patients were discussed and scrutinized.

Paratyphoid diseases. Another widespread group of bacteria producing septicemic and enteric diseases in animals and not infrequently group outbreaks in man is the paratyphoid group including *B. enteritidis*, related on the one hand to the typhoid bacillus, on the other to certain races of *B. coli*. In man this species of bacteria is most frequently associated with acute gastrointestinal upsets, leading in rare instances to a fatal outcome. In another group of cases the disease simulates typhoid but is less severe, less protracted and rarely fatal. Where man acquires this infection has been the subject of research for nearly forty years and enquiries are still going on. The reasons are not far to seek. The paratyphoid group of bacteria produces enteritis in cattle and swine, and abortion in mares. It produces epidemics among rabbits, guinea-pigs and mice in our laboratories, and in wild rats. It is represented by several distinct serologic groups which break up into minor subgroups. In the smaller animals several races may infest the same species at the same or different times. Certain group outbreaks in man have been definitely traced to rats and to veal, horseflesh and pork, when not sufficiently cooked. It is not improbable that the strains infesting the larger animals are distinct from one another but that the smaller animals are susceptible to all. It may be that the rat is an exception and cultivates its own variety. The difficulty with the mass of researches upon the paratyphoid races has been too great attention to nondescript cultures with no history and too little to the larger animal hosts.

Tuberculosis. So much has been written during the past twenty-five years on the significance of bovine tuber-

culosis to the human race that I can add little to the subject not already well known. The transmission of the bovine tubercle bacillus occurs almost exclusively in cow's milk. In the second and more advanced stages of the disease, the udder may become the seat of tuberculous processes due to the escape of bacilli temporarily circulating in the blood as the result of some focus breaking down. About one to two per cent of tuberculous cows have some tuberculous foci in the udder. Cows in very advanced stages of the disease, when emaciation has set in and the disease has become generalized, may discharge a few bacilli in the udder. The cow's chief form of tuberculosis is pulmonary. The cow coughs up particles of caseous material and mucus impregnated with tubercle bacilli. This coughed-up material is chiefly swallowed but some is thrown out during coughing, otherwise it would be difficult to account for the preponderating pulmonary disease of the cow herself. The swallowed bacilli are discharged in the feces and when the milking is not guarded by preliminary cleansing of the cow, some of these bacilli may find their way into the milk pail with fecal matter. This source of bacilli cannot be significant owing to various inhibiting conditions. It has, however, not been quantitatively studied.

The main points upon which agreement is general are that children under five are almost the only victims, that the cases of subcutaneous lymph node tuberculosis due to the bovine bacillus are relatively benign, and that, according to a careful study of the statistical evidence of Cobbett, between five and six per cent. of all deaths from tuberculosis are attributable to the bovine virus. In view of the data on hand, pasteurization of milk is gradually being introduced in large cities. Fortunately, the thermal death point of tubercle bacilli is low. The eradication of bovine tuberculosis is now being pushed by State and Federal activities in the hope of establishing permanently tuberculosis-free areas and gradually increasing such areas until the disease has been eliminated. The method used is to kill all animals reacting to tuberculin and repeating

the procedure every six months until reactors are no longer encountered. The entire movement is tedious, expensive, and fraught with difficulties tending towards relapses. These are attributable to failures of the tuberculin, carelessness in administering the test and in interpreting results, introduction of infected animals, and reintroduction of the virus from feed, swine, dairy products and the like. Although the problem of bovine tuberculosis may be considered temporarily and practically disposed of by the use of pasteurized milk and the continued killing of tuberculin-reacting bovines, the scientific aspects are not so satisfactorily cleared up. The reason for the immunity of the human adult is not in sight since many must be exposed in cow stables to bovine bacilli. The existence of atypical forms as described by Griffiths needs more detailed study. Some method of recognizing the presence of the bovine type in the human body would be of great value to the clinician and surgeon.

Rocky Mountain Spotted Fever. A disease of startling possibilities but restricted by advancing agriculture is the Rocky Mountain spotted fever which first came to the notice of medical science in the nineties of the last century. Since then numerous papers have been published by various investigators and some very valuable data brought to light. The human disease is an acute febrile disease, characterized by an eruption of spots, varying much according to the severity of the attack from bright red to purple and becoming petechial in character. The mortality is high. In 1903, 121 cases had been collected, of which 84 were fatal. The immediate incitant is a tick, the bite of which injects the virus. This mode of transmission accounts for the non-contagiousness of the human disease, observed by all local physicians. The demonstration of the infectivity of the wood tick was given by Ricketts in 1906. He also was able to induce the disease in guinea-pigs which animals in turn infected ticks placed on them. He furthermore showed that the virus may pass to the ova of the infected female tick and thence to the next generation. Ten years later, Wolbach demonstrated the presence of minute

bacteria-like organisms in the vascular lesions of human and animal victims and in the infecting tick. In 1923, Noguchi showed the prophylactic efficacy of a serum produced in rabbits with the blood of infected guinea-pigs.

Thus it appears that it required about a quarter century to round out more or less our knowledge of this unique disease. According to the data at hand, the tick harbors certain Rickettsia-like organisms to which it is indifferent. They are highly specialized parasites transmissible through the ovum to the next generation. More likely the virulence of the infecting agent is maintained through the agency of wild animals, such as mountain goats, woodchucks, spermophiles and others, which act as temporary reservoirs of virus for the tick. Whether the tick is self-sustaining as to the virus or whether it depends on these various animal hosts for a fresh supply of virus, in either case we have to deal with a distinctly animal disease and it is therefore included in this survey.

Septic sore throat. Our relation to animal life under the present urban and rural conditions of living is made quite intimate through the consumption of raw cow's milk. I have already mentioned the presence of tubercle bacilli in tuberculous udders and of *B. abortus* in the udders of a small per cent. of cows which have aborted at some time and are carriers of this species. A third potentially dangerous organism appears now and then in the udder—a streptococcus—which has been the cause of numerous large and small epidemics of septic sore throat. The sudden appearance of widespread epidemics of septic sore throat was signalized some twenty years ago. Before that time this disease was probably prevalent in small outbreaks and such occurrences had been reported from England by Klein, Savage and others. In this country the consolidation of distributing agencies and the practice of mixing the milk of a large number of cows led to the larger outbreaks. Hundreds and even thousands of cases in a single epidemic have been reported since 1910 in different cities of the United States.

The continuance of the epidemics in spite of increased sanitary precautions and restrictions made it necessary to reject the current explanations that the milk had been infected in transit by human beings. Working upon Massachusetts outbreaks some fifteen years ago with J. H. Brown, I formulated the theory that some streptococcus alien to the cow had entered and multiplied in the udder for a more or less indefinite period. Unknown to us, Savage, in England, had expressed the same idea in the course of his work. At the same time D. J. Davis, studying outbreaks in Chicago, came to the same conclusion. Since then many outbreaks have been investigated and the views presented have been sustained. The hemolytic streptococci of septic sore throat are not identical with ordinary hemolytic streptococci of the cow's udder, but evidently alien to it, either producing severe mastitis or else simply multiplying in the udder and causing only slight disturbances. They are to all appearances of human derivation, since identical strains have been found in the throats of the dairy workers in most of the large outbreaks. Only through a very careful bacteriological control of the streptococci occurring in any dairy herd can similar calamities be prevented in the future among those drinking raw milk.

Certain species of bacteria, common to both man and animals, have received as yet little attention. I refer to the many races of *B. coli*, streptococci and staphylococci, parasitic on mucous membranes of domestic animals. To the urban dweller only those contaminating raw foods are of significance. It remains for the future to see them serologically typed and compared with forms found in man in diseased conditions. Those parasitic in the udder of the cow have already been referred to as probably harmless to man if we except the *Streptococcus epidemicus* just referred to.

Animal parasites. This review would be quite incomplete if I failed to mention certain higher animal parasites either shared in common by man and certain animals, or

else transferable from animals to man. Certain tapeworms have figured conspicuously in the past in those countries where certain kinds of meat are eaten raw. Thus the beef tapeworm lives in the human intestine in the adult form and in muscular tissue of cattle in the larval or cysticercus stage. The pork tapeworm enjoys the same dual hospitality in man and the pig. When human beings eat the cysts in raw or underdone beef or pork, the intestines may become the seat of the respective tapeworm. The fish tapeworm, not infrequently encountered in eastern Europe, has probably established itself recently in some of the inland waters of the United States. Carried across in the intestines of some European immigrant and discharging countless ova, the parasite thus furnished the opportunity for fishes to become infested with the intermediate or larval stage. Another tapeworm (echinococcus) belonging in its adult, intestinal stage to the dog has figured more or less in the medical and surgical literature of the past because the intermediate larval stage following the ingestion of ova discharged by the dog has been found in almost every organ of the human body, notably the liver in which organ large cysts develop gradually. These may break and when situated in vital spots, such as the medulla oblongata, they have caused instant death.

Another strictly animal parasite which has played a conspicuous role in human pathology in the past, especially in central Europe, is the roundworm, *Trichinella spiralis*. It has caused extensive local epidemics with high mortality following the consumption of the raw muscular tissue of a single pig. Trichinosis is not unknown even today when unfortunates consume inadequately cooked pork. The parasite is attributed to the pig, but it occurs in rats and small laboratory animals have been infected successfully. All that is necessary to maintain the disease is for the pig to eat an infected rat and for another rat to gnaw the body of the infected dead pig and so on *ad infinitum*.

Having catalogued briefly most of the conspicuous maladies which we derive from animal reservoirs, it may be

worth while to pass in review the animals themselves. Here our division into useful and noxious may be followed. The cow has been responsible for the beef tapeworm, certain types of paratyphoid infection, tuberculosis, septic sore throat, and very doubtfully for cases of undulant fever. Anthrax cannot be charged to the cow exclusively, since it attacks other domestic animals. Hides may carry spores, however, and permanently infect grazing lands irrigated by water from tanneries and other factories working up hides, wool, hair and bristles. Sheep are of relatively little significance as carriers of human disease if we except wool impregnated with anthrax spores. Swine are responsible for trichinae, the pork tapeworm, paratyphoid infections and probably certain forms of undulant fever. Though they are victims of bovine tuberculosis whenever exposed, it is doubtful that human beings, excepting perhaps butchers, are infected from pork owing to inspection in large cities, the freedom of muscular tissue from foci and the general custom of cooking pork. Horses are the source of glanders, of anthrax in horse hair and hides and possibly of certain races of paratyphoid. Dogs are responsible for rabies and the echinococcus tapeworm.

Among the noxious mammals, rats stand at the head, as potential reservoirs of bubonic plague, of the spirilla of rat-bite fever and melioidosis, as well as the spirochæte of infectious jaundice, and certain races of paratyphoid bacilli. Mice, as the most domestic of noxious pests, are minor reservoirs of plague bacilli, of certain skin affections, and being subject to various paratyphoid infections, potential reservoirs of these as well. Among game we are aware of the wild rabbit as carrier of the tularemia virus, sphermophiles of plague when endemic, and of various species of game as sources of the Rocky Mountain spotted fever virus.

If we now reverse the emphasis of our theme and ask how many human diseases are transmitted to animals there is very little to discuss. If a disease passed from animal

to man becomes independent of the animal source and self-perpetuating by direct transfer from man to man, then we may say that such disease is again transmissible back to animals. This would be true for pneumonic plague in which the sputum becomes infectious for other human beings. However, very few of the human cases of disease described as originating in animals have been shown to be dangerous to their environment. Among them septic sore throat, glanders, discharging tuberculous lymph nodes containing bovine tubercle bacilli, groups of paratyphoid and meat poison cases discharging bacilli in the feces may perhaps transmit enough infectious material to produce clinical cases. On the whole medical literature contains very little evidence of such occurrences. In view of the sanitary isolation of patients practised to-day any escape of infectious material is largely prevented under current conditions of hospital and private practice. What would happen if human beings lived the natural life of animals might be quite different from present actualities. We are thus compelled to admit that apparently animals do not suffer from strictly human diseases. The current is plainly the other way. Even the ubiquitous human tubercle bacilli are traceable to tuberculous lesions in only a few species of animals, notably monkeys, interned in zoological gardens. Most animal tuberculosis is due to the bovine bacillus. Poultry which is the victim of a special form of tuberculosis plays only a very insignificant role in the human disease.

Underlying this phenomenon of the passing of infectious agents from animals to man and the reverse is the far more important and fundamental one as to the fate of such aberrant parasites. Do they become modified in the human or other aberrant host in one passage? Is the process irreversible? Bearing on this question it is of interest to note that the guinea-pig, the most useful laboratory animal, is victimized by a number of diseases which may have been derived at least in part from close association with man. Among the more significant are two paraty-

phoid diseases, a pneumonia due to an atypical pneumococcus, a streptococcus producing polyadenitis, and a respiratory affection associated with types of *B. mucosus capsulatus*, also known as Friedländer types. These are all self-perpetuating diseases in the guinea-pig and the respective bacteria are probably derived from man but are modified and no longer transmissible to man.

The most important of the probable transformations of human viruses in animals is that of cowpox or vaccinia. Much has been written upon the original source of vaccine virus. Since the day of Jenner, who considered cowpox as a derivative of grease of the hock in horses, there has been more or less fluctuation of opinion as to the nature of cowpox itself. The findings of the celebrated Lyons Commission in 1865 controlled for a long time the views of the medical profession. This commission, while admitting that smallpox virus may be successfully inoculated into the cow, denied that it underwent any mitigation or modification, and that, returned to man, it would produce genuine smallpox. Since that time a number of investigators have succeeded in transmitting smallpox to the cow and producing genuine cowpox, and it is now quite generally regarded as a derivative of smallpox. The frequent appearances of cowpox in the early years of the nineteenth century were in all probability due to the accidental inoculation of the cow with smallpox or with vaccine from the hands of the milker, which in its turn was at some earlier time derived from smallpox by passage through the cow. Vaccine, derived from variola, the so-called variola-vaccine, was prepared by Voigt, of Hamburg, in 1881 and used by him with success. Later a new stock of variola-vaccine was prepared successfully in Munich, Bavaria. A few years ago, horsepox, appearing in Holland during the World War, was successfully transmitted by de Jong to calves. The eruption from the latter produced typical vaccine vesicles on the arms of children and a subsequent inoculation with ordinary cowpox was abortive. There is thus a close immunological reciprocity between smallpox,

cowpox and horsepox which indicates that they may have been originally derived from the same ancestral type.

Preceding the introduction of solid culture media by Robert Koch, and therefore preceding the beginnings of bacteriology as a science, there were current more or less fantastic ideas of the variability of microörganisms which if accepted would have negatived the possibility of recognizing any definite etiological factors in infectious diseases. Hence with the introduction of methods to test these current ideas the relative stability of bacterial species was soon universally accepted. This salutary change was not without certain disadvantages for it put off the study of variability many years. In human medicine this disadvantage played only an insignificant role since the first pathogenic species to be discovered were usually invasive forms and quite stable. To those who studied disease from a comparative standpoint with an abundance of material, variations promptly presented themselves, especially among paratyphoid strains, among glanders and among tubercle bacilli. Even in the strictly human camp violent controversies arose over the significance of variants in the etiology of Asiatic cholera. Since then every conceivable species of bacteria capable of growing on artificial substrates has been found to be made up of a group of variants. The variations were grounded either in slight differences as to fermentative capacities, pigment and capsule production, or in varying capacities to produce toxins or to respond to immune bodies. Even the latest subject of research, the streptococcus associated with scarlet fever, is found endowed with slightly varying characters.

Among the invisible filterable causes of disease the determination of cultural and physiological variants is at present impossible owing to the fact that artificial culture in the bacteriological sense is not yet attained. But even in this group two immunologically different races have been found in the virus of foot-and-mouth disease. Smallpox prevails under the guise of the usual form and a milder type, alastrim. Numerous illustrations might be given,

involving practically every human and animal disease studied, of the universal occurrence of variant types.

That there are numerous physiological differences and diversities among the races of man and animals upon which the microörganism parasitize is so well known that I merely mention it. The differences are accentuated when several host species of animals are inoculated with the same microörganism. Then also there are discovered certain peculiar, accidental relationships among hosts which a given virus might utilize. Thus the house mouse is not susceptible to glanders but the field mouse is. Mouse septicemia bacilli are quite virulent for pigeons. In fact all that has been stated in this lecture serves to illustrate both host specificity and the occasional breakdown of this barrier.

Going parallel with observations in natural disease, laboratory studies by many scientists extending over many years have brought to light fluctuations, modifications, mutations and dissociations of physiological and morphological characters of bacteria as well as increase or decrease in virulence through serial passages through animals. In spite, however, of these changes, suggesting both degeneration and regeneration, and the sudden appearance of hitherto latent characters, the different cultivable species of bacteria remain true to a certain fundamental type within which the variations occur. This leads us to the concept of microörganisms as possessed of a number of more or less independently variable characters, morphological and physiological, some of which may be augmented, depressed, or lost, or even appear as new characters. Among the pathogenic forms the increase in toxin production, the appearance of defensive envelopes may modify disease. In fact there are probably multiple toxins of different activities as well as multiple types of defense, each brought into action by certain specific, but accidental, host relations, making possible new diseases whenever the special relationship is tapped by the accidental meeting of certain hosts and certain microörganisms. Thus *B. abortus*

from the cow, passing to swine and remodeled in this species, may accidentally pass back into the cow's udder as pathogenic for some human beings.

Taking these facts into consideration and the increasing number of new trials open to microbes to become established in new hosts made possible by the continuous flux of an increasingly dense population of both human and animal species, domesticated or merely parasitic on conditions produced by domestication, we may begin to visualize the possibilities for new diseases to appear. They may come more or less suddenly when conditions are rapidly altered as in war for man, and in rearing large numbers of animals in confinement with regular and frequent communication with other similar populations. We may readily conceive of the many changes in infectious organisms partly accomplished, followed by the destruction of the new race because some conditions are not fulfilled, and hence the many failures which precede what we may call the birth of a new disease. In this highly significant process the original character of the aberrant parasite may be so altered that its source cannot be traced. Its course may have been devious and the intermediate stages unobserved when they occurred and since wiped out, so that this course can no longer be traced back to its beginnings. The appearance of apparently new diseases associated with ultramicroscopic organisms is particularly mysterious, since our methods are quite inadequate to inform us from what direction the newcomer hailed. The ancestry may be directly before us, in our midst, in fact in some animal disease, but we may fail to see it because of the irreversible process that has brought the change about. With this concept in mind we can imagine many dangerous combinations frustrated, cut short, by hygiene and sanitation, numerous diseases in gestation prematurely aborted, but occasionally one successfully escaping destruction and launched into the world, at first unrecognized until a certain momentum has been acquired which brings the disease into the open.

NAPOLEON—HIS LIST ILLNESS AND POSTMORTEM [1]

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A little over a hundred years ago a man died on a lonely little island in the Atlantic, his baker's dozen of followers and himself surrounded by a garrison of three thousand men and a squadron of ships. So great was the hysteria in England, that his advent on this rock ten miles long by six broad, twelve hundred miles from the nearest land, was marked by an increase of the military population from two hundred to three thousand. It was even necessary to visit him almost daily in order to ascertain that he had not escaped. This hatred of the man could well be understood for he had defied and set at naught that most sacred of English institutions, Toryism, the English synonym of Bourbonism. The upheaval had begun with his ragged followers in Italy, reached its apogee at Tilset, and began its recrudescence through sheer exhaustion after the disastrous Russian campaign. One would think that this man so overwhelmed by oppobrium, this drinker of children's blood, given to incest, murder, robbery, and every crime in the calendar, would by the mere weight of his iniquities lie heavily in his simple unmarked grave beneath that willow tree, never to be known in his true light by the world at large; yet such was not to be a fact, for in 1840 his body was received with the deepest affection by the Nation he had raised to glory from the welter of revolution. No funeral has ever been so filled with human emotions, the ceremonies lasted from the 8th to the 15th of December and were attended by practically all of France and his magnificent sarcophagus at the home for wounded soldiers which he inaugurated, is still visited by thousands who gaze in reverence and awe at the earthly home of the man who almost struck the death blow at feudalism. It was he who said that in fifty years the

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world would either be Cossack or free, and this prediction was fulfilled nine years ago with a stupendous sacrifice of ten million men.

I possess what I am told is his first biography in English; it was published in London in 1797 immediately after his Italian campaign. Since then he has been the subject of thousands of volumes; his last biography translated from the German has sold to nearly one hundred and fifty thousand copies. What is the secret of this seemingly inexhaustible interest in Napoleon? I, personally, believe that it lies in the fact of the appeal his life has had to the romance in all of us. Here was a man of the people so poor that he often went hungry, yet so filled with talent and the fire of genius that he attained the heights of glory and power. His military genius unfortunately clouds for many of us gifts of mind fully equal; he gave France a great code of laws, he built wonderful roads, he beautified his beloved country with remarkable gems of architecture, he established free schools for the poor, stimulated French industry by every means at his command, and even in the midst of his Russian campaign designated who was to sing during the season at the Paris opera. I have a letter from Berthier, his Chief of Staff, to Bessieres, Commander in Chief of the Imperial Guard, in which Berthier asks Bessieres to incorporate in the Guard ten chasseurs and to ask Napoleon's permission to do so. The Guard at one time numbered fifty-six thousand men and its Commander in Chief could not select ten of its members without the Emperor's approval. This is but one example in a thousand of the grasp of detail which this man forced upon himself. He raised to wealth and power upon their merits alone the great majority of his marshals and was generous to a fault, even in the face of defection, as evidenced in his treatment of some of them on his return from Elba.

Napoleon's household at St. Helena consisted of General Bertrand, wife and three children; Count Montholon, wife and two children; Count LasCases and son, and General Gourgoud. Barry E. O'Meara, Surgeon of the Beller-

ophon, had volunteered his medical services and remained as Napoleon's medical attendant until 1818, when he was banished from the island by Sir Hudson Lowe, after violent quarrels with the Governor respecting social visits to Napoleon, and his refusal to tell the Governor the purport of his conversations with the Emperor. On July 25, 1818, he made his farewell visit to Napoleon despite an order from the Governor, interdicting him from any further interview with General Bonaparte or the inhabitants at Longwood.

Dr. O'Meara states that Napoleon suffered considerably from nausea, and seemed in very poor health, yet he received no medical advice six months later, when Dr. Stokoe, Surgeon of "The Conqueror," saw him a few times. Dr. Stokoe sailed for England on January 21st, 1819, and Napoleon, despite considerable illness, received no medical advice until the arrival of Dr. Antommarchi who with the consent of the British government arrived at St. Helena on September 19th, 1819. Francesco Antommarchi was born in Corsica in 1780 and received his medical degree at Pisa. He was Professor of Anatomy at Florence in 1819 when he was selected by Cardinal Fesch, and Madame Mere, Napoleon's mother, as medical advisor to the Emperor at St. Helena. Antommarchi accepted the commission and in company with two priests and two domestics travelled slowly through Germany, arriving in London on April 19th, 1819. Here he met with all kind of difficulties and numberless delays. Offers and insinuations were thrown out in order to prevent his departure for St. Helena. It was then that he had frequent conversations with O'Meara and Stokoe in reference to Napoleon. He was, however, finally permitted to sail.

Napoleon's health became progressively worse in July, 1820, and by September the attacks of vomiting, pain in the gastric region, headache, anorexia and constipation became more frequent. During remissions in these attacks he was still able to be about, but by December 26th he could hardly make a few steps without extreme fatigue.

His condition gradually grew worse, but in February and March, 1821, he was able on two or three occasions to drive about the garden in a caléche for a few minutes. By the first of April the vomiting, gastric pain, fever, prostration and weakened heart action became much more frequent and the mental anguish and depression noticeable for many months became aggravated. At this time Dr. Archibald Arnott, Surgeon of the 20th Regiment, was called in consultation and thereafter saw Napoleon frequently with Antommarchi. On April 15th the celebrated Napoleonic will was dictated. On the night between the 24th and 25th he vomited incessantly; this continued throughout the whole day of the 25th. On the morning of the 27th Napoleon began to have gastric hemorrhages as evidenced by the "coffee ground" color of vomited material. His bowel movements at this time were of a black color. The heart action was weak and he was covered with cold perspiration. With much effort he could only trace a part of the 18th codicil to his will. On the 28th he gave his final instructions to Antommarchi as follows: "After my death I wish you to make an autopsy. Do not let any English physician other than Dr. Arnott touch my body. Preserve my heart in alcohol and deliver it to Marie Louise in Parma, give her all the details of my death. Examine well my stomach, and make a detailed report to my son. Indicate to him what remedies or mode of life he can pursue which will prevent his suffering from a similar disease. This is very important for my father died of a scirrhosis of the pylorus with symptoms very much like mine."

On the 29th he became delirious, by 1 p.m. his mind was clear and Antommarchi asked his permission to apply a vesicatory to the epigastric region. He replied, "If you wish it. I do not expect the least improvement from it but I am nearing my end and I wish you to judge of my appreciation of what you have done for me by my resignation." On May 4th the end was near. He seemed in complete collapse, the pulse was intermittent and weak, singultus, cold sweat and dyspnea were present. Throughout that day a terrific tropical storm raged, rain fell in

torrents, and most of the trees in Longwood were uprooted. On the morning of the 5th many gastric hemorrhages occurred, the vomiting and singultus were continual. At 5 a.m. he was still delirious, the last articulate words being "Tâte d'armée." Coma supervened, the body cold with tetanic spasms, the pulse imperceptible, the dyspnea excessive, the respiration stertorous. At eleven minutes to six respiration and heart action ceased entirely. England's prisoner had escaped. In Arnott's own words "The scene of sorrow Longwood House presented on the evening that great and extraordinary man breathed his last will never be erased from my memory."

The autopsy was held twenty and a half hours after his death by Dr. Antommarchi in the presence of Drs. Thomas Shortt, Post Medical Officer; Archibald Arnott, Surgeon, 20th Regiment; Charles Mitchell, Surgeon, H. M. S. Vigo; Francis Burton, Surgeon, 66th Regiment and Matthew Livingston, Surgeon, H. C. Service. The body appeared quite fat, on incision about an inch thick on the sternum, and one and a half inches on the abdomen. On cutting through the cartilages of the ribs, which were in a great part ossified, the thoracic cavity was exposed. There were adhesions and about three ounces of a yellowish fluid in the left pleural cavity. The upper lobe of the left lung contained several tuberculous excavations. The right lung was normal, but the right pleural cavity contained eight ounces of fluid. Both lungs were of a normal color and crepitant. The pericardium was normal, the heart of natural size but thickly covered with fat. The auricles and ventricles were empty of blood and presented no pathological changes. The aorta was normal. The abdomen was greatly distended, and on incision the peritoneum was found covered with a viscous fluid. On the anterior surface of the stomach at the lesser curvature near the pylorus was a complete perforation large enough to admit the little finger. This opening was completely closed with adhesions. On opening the stomach it was found filled with a large quantity of "coffee ground" material of an acid putrefying odor, and the internal surface of the stomach

was almost completely covered by a carcinomatous mass; only a small part of the cardiac extremity seemed free of the disease. All the adjacent lymph nodes were greatly enlarged and cancerous. The liver and spleen were engorged with blood, and there were many adhesions between the liver and stomach, but otherwise these two organs were normal. The gall-bladder was also normal. The urinary bladder contained small calculi. The right kidney was normal, the left kidney was slightly displaced. The brain was not examined.

Antommarchi sutured and washed the body, and for the last time loving hands dressed it in the familiar uniform of the Chasseurs of the Guard, the Grand Cordon of the Legion of Honor at his side, the Grand Cross of the Legion and the Iron Crown on his breast, the little three-cornered hat on his legs. It was thus that he disappeared from the view of man. His faithful little band departed from their prison on May 27th, 1821, and as a last favor from Sir Hudson Lowe, the ship assigned to them was a cattle ship supplying live stock to the Island, and it was in such a malodorous environment that they bid farewell to the man who was to remain in exile, even in death, for twenty years more.

In conclusion, the curious fact must be noted that Antommarchi found what he termed tuberculous excavations and tubercles in the left lung, yet Arnott, an eye witness at the autopsy, states that the lungs were normal. No mention of any clinical signs of tuberculosis are mentioned in the "Memoires" of the St. Helena group. All of the symptoms of his last illness clearly pointed to a gastric origin, and the autopsy definitely proved that a carcinoma with perforation was the cause of death.

ABSTRACTS OF PAPERS DELIVERED AT SECTION MEETINGS

Section of Neurology and Psychiatry,
October 11, 1927

EXPERIENCES WITH ENCEPHALOGRAPHY VIA THE LUMBAR ROUTE[1]

E. D. Friedman

Historical Data. Dandy in 1918, first suggested the injection of air into the cavities of the brain for diagnostic purposes, but he abandoned the endo-lumbar for the cerebral method. Since then, however, Bingel, Forster, Wartenberg, Liberson, Carpenter, Heidrich and others have made use of the spinal method, some of them with the aid of complicated apparatus (Bingel, Wartenberg, Liberson).

Technique. Consists of the replacement of spinal fluid by air, via the endo-lumbar route.

Phenomena observed during the procedure—

a. Pain in the occipital region, especially behind the ears, and along dorsal root zones.
b. Frontal headache.
c. Transitory collapse-phenomena with marked pallor and profuse perspiration.
d. Acceleration of the pulse rate with subsequent bradycardia.
e. At times, nausea and vomiting.

After-effects observed—

a. Headache, which persists on an average from one to three days.
b. Dizziness.
c. Sensation of succussion in the head (in two instances).
d. Meningeal syndrome with polynucleosis in the spinal fluid (on three occasions).

[1] This paper is based on observations made in sixty-five cases. Most of these were studied in the neurological service of Mt. Sinai Hospital and a few of them, in the neurological department of Bellevue Hospital.

There were no fatalities that could be ascribed to the procedure even when the patient was in poor physical condition.

Encephalogram. The encephalogram should be made immediately after insufflation. At the first examination, antero-posterior and lateral views are taken. A complete series of plates is made on the following day.

The most important view is the antero-posterior, as it often gives information concerning the ventricles, when the quantity of air is not sufficient to be well visualized on the lateral plate. The interpretation of the pictures requires considerable experience. The air leaves the subarachnoid space almost entirely within twelve to twenty-four hours, unless there is retraction of the brain with external hydrocephalus. It leaves the ventricles in periods varying from three to seven days. In one instance, operated upon by Dr. Cushing, air was found in the ventricles nine days after its injection. Large quantities of air, of course, remain in the cavities of the brain for longer periods.

The normal encephalogram presents in the antero-posterior view, the characteristic butterfly-shaped anterior horns of the lateral ventricles, the upper part giving a darker and the lower part, a lighter shadow, owing to encroachment of the basal ganglia on the ventricles. In the postero-anterior view, we get a figure resembling ram's horns. In the lateral plate, if a sufficient volume of air is injected, we obtain a cast of the lateral ventricle. The tip of the inferior horn, the third ventricle and the cisternae overlap in the lateral plate. The fourth ventricle appears in the form of a triangle behind the petrous bone. Often the cisterna pontis can be visualized posterior to the pituitary fossa. The air in the cerebral subarachnoid space is usually observed in the form of fine threads coursing through the cerebrum. Lateral stereoscopic plates are often confusing because of incomplete filling of the ventricles.

On the second day, a change is usually noted in the shape of the anterior horns from the butterfly pattern to a more or less rounded form. This is probably to be ascribed to the irritating effect of the air on the choroid plexus, resulting in hypersecretion and the production of a transitory internal hydrocephalus. Frequently, one observes, that more air reaches the ventricles after several hours or on the second day. This has been attributed to the pumping effect of the cisternae.

In three of the cases, though a sufficient quantity of air had been injected, the absence of ventricular air shadows was noted. Similar observations have been made by Forster, Bingel, Kaufmann and others. There is no adequate explanation for this failure of ventricular filling, after lumbar insufflation. It may be that in such individuals, either the foramina of Magendie and Luschka are not patent or the arachnoid villi exercise a ball valve action. Similarly, Monakow believes that lumbar puncture, by diminishing the pressure in the spinal subarachnoid space, opens up potential foramina.

Nineteen cases were selected for detailed analysis.

Summary of Clinical Observations

The method described is of great value in the localization of brain tumors. It gives evidence of organic disease in doubtful cases and helps to differentiate vascular from neoplastic processes.

This method also has merit in cases of trauma for the confirmation of the diagnosis of post-traumatic epilepsy and for the differentiation of traumatic neurosis from "traumatic encephalopathy" (Schwab) and traumatic encephalitis (Osnato). In some cases of injury to the skull, one finds dilatation of the ventricular system with migration of the ventricles towards the side of the lesion (Ventrikel-Wanderung). The encephalogram is also of importance in differentiating neoplastic lesions from hysteria or encephalitis.

In cases of brain tumor, one encounters a shifting of the ventricular system to the opposite side, a change in the vertical axis of the third ventricle, dilatation of the contralateral ventricle and general distortion of the normal butterfly figure. There may be encroachment on the ventricle from above or from below. The posterior horn may be encroached upon by tumors in the posterior fossa although in the experience of the writer, it is difficult to draw any diagnostic inferences from simple distortion or inadequate filling of the posterior horns.

Occasionally, in brain tumors the homolateral ventricle is distended, but in such instances there is a shifting of the third ventricle to the opposite side. In cases of internal hydrocephalus, one often finds a characteristic extension of the lateral ventricle posteriorly, in the shape of a "glove finger."

If one finds normal and symmetrical ventricles, the existence of a cerebral tumor is improbable and if this ventricular picture remains unaltered for months, the presence of a new growth may be excluded. Often neoplasms, which give few clinical signs, for example, right frontal and temporo-sphenoidal lesions, yield striking radiographic findings.

This method was employed in one case of chronic brain abscess without harm. In a number of instances, the diagnosis of brain tumor was abandoned because of the demonstration of normal ventricles. The encephalogram may permit us to make a diagnosis of cerebral neoplasm early in its course and before the advent of fundus changes, by demonstrating changes in the ventricular system, such as we have described.

The condition which we have designated "Retracted Brain," includes instances of late epilepsy with symptoms and signs suggestive of focal cerebral disease. Even though there is no evidence of general athero-sclerosis in these cases, we believe that they present focal lesions of vascular genesis with consecutive atrophy of the brain.

Most of the epileptics revealed internal or external hydrocephalus or both. The external hydrocephalus was manifested by either extensive accumulations of air at the vertex, at the frontal or at the occipital pole or by larger collections of air in the sulci. The case of degenerative chorea and the one of paresis showed hydrocephalus *ex vacuo*. In the instance of hemiplegia, dating back to early life, the characteristic ventricular migration toward the side of the lesion was noted. The case of subdural cyst exhibited an absence of air in the left ventricle with a crescentic distortion of the right ventricle. In the microcephalic idiot, we were able to demonstrate, with so small a quantity as 15 c.c. of air, a definite internal but no external hydrocephalus. The precedure is usually very well borne by paretics and epileptics.

Advantages of Endo-Lumbar over Trephine Insufflation—

1. Lumbar insufflation is not a surgical procedure; it can, therefore, be carried out by the neurologist in the hospital ward.

2. With the Dandy method, it is sometimes difficult to find the ventricles, particularly if they are dislocated.

3. The diagnostician does not have to traverse the brain and is, therefore, in no danger of striking a vessel and inducing bleeding.

4. By means of lumbar insufflation, one can fill the cerebral subarachnoid space and the cisternae. A better insight is thus obtained into the brain structures.

5. All the air injected finds its way into the cerebral spaces, whereas with the Dandy method, the air often escapes beside the needle.

6. There is practically no mortality from this method, and it is, therefore, a safe procedure.

In favor of Dandy's method, the following points may be enumerated:

1. Fewer subjective complaints on the part of the patient and absence of the signs of meningeal irritation.

2. Less air required. But in a way, this is a disadvantage, because one cannot fill all the cerebral spaces.

In cases of obstructive hydrocephalus, the trephine method is the better. One is not justified in making a diagnosis of obstructive disease if the air fails to reach the ventricles after lumbar insufflation. In such cases, air injected through a trephine opening, may remain in the ventricles for weeks, indicating the lack of absorptive power of the ventricular walls.

Conclusions. Endo-lumbar insufflation of air for diagnostic purposes is a safe and helpful procedure. It elucidates many phases of cerebral diagnosis. It is less likely to give rise to serious complications than the injection of air through a trephine orifice. For the confirmation of the diagnosis of tumor of the posterior fossa, however, and for the demonstration of obstructive internal hydrocephalus, the Dandy procedure still remains the preferable method.

Section of Medicine, February 21, 1928

THE DOSAGE AND CLINICAL USE OF INTRAVENOUS DIGITALIS THERAPY

HAROLD E. B. PARDEE

There are two methods which have been commonly used for testing the activity of digitalis upon the human heart. The first of these involves the giving of digitalis in large or medium sized doses, until a definite toxic effect is produced. The second involves the giving of the drug to slow the heart rate of patients who have rapid hearts due to auricular fibrillation. In 1923 I was able to report upon a method of testing the activity of digitalis upon the human subject which did not demand the giving of toxic doses. This method depended upon the fact that digitalis affects the T wave of the electrocardiogram in rather small doses. The object of this test was to determine the smallest amount of a digitalis preparation which would cause

a measurable decrease in the height of the T wave. This amount of digitalis was called a T wave unit, and it was determined to be between 1/8 and 1/10 of the full therapeutic dose of the preparation.

In 1925 the commonly used intravenous preparations of digitalis were tested for their ability to affect the T wave of the electrocardiogram, and it was found that they had a strength far less than had been suggested by the manufacturers. The T wave unit of these preparations given intravenously was about equal in volume to the T wave unit of the tincture of digitalis given by mouth. Assuming that the full therapeutic dose of these preparations was 8 times the T wave unit, we have proceeded to treat patients with rapid heart rate due to auricular fibrillation, by the intravenous administration of ½ of the estimated therapeutic dose. This dose was 4 times the T wave unit and practically 1 minim per pound of body weight of the patient.

The patients had received no digitalis for the previous three weeks. They were put to bed and kept quiet and several counts of the heart made with a stethoscope to determinte the control heart rate before administration. They were then given 1 minim intravenously of the various digitalis preparations, and the heart rate counted by stethoscope at intervals thereafter.

Tables were shown to illustrate the slowing of the heart which was produced by intravenous administration of Digitan solution, Digalen solution and Digifolin solution in the above doses. It was observed that there was a marked drop in the heart rate during the first fifteen to thirty minutes, and a further slowing during the next hour and a half or two hours. This effect was observed after each of the preparations, and there was no material difference from one to another. Certain patients, altho not evidently different clinically, showed less response to the digitalis. These patients are evidently more resistant to the effect of digitalis for it is not possible that variable absorption of the drug could have any influence here.

The effect upon the T wave was also studied by Dr. George Friedman, and will be reported upon later. The preliminary work seems to show that the T wave is, as a rule, affected somewhat later than the heart rate.

. The results with these digitalis solutions are practically identical with those obtained by Wyckoff and Goldring who used Ouabain intravenously.

The prompt effects after intravenous administration are in contrast with the time of onset of digitalis effects after oral and rectal administration of analogous doses of tincture of digitalis. After oral administration the initial slowing of the heart rate of patients with auricular fibrillation appears in from two to five hours, the maximum slowing in from seven to twenty-four hours. The effect upon the T wave occurs in from two to twenty-four hours after administration. There is evidently an advantage in favor of intravenous administration over the other methods in that the onset of action is more prompt and the maximum effect is produced in about one-third of the time.

There is no advantage in giving digitalis preparations intravenously as compared with the oral or rectal route, unless the patient cannot retain digitalis by mouth or by rectum, or unless the patient is in extreme need so that the effect must be produced in two or three hours. When intravenous administration is decided upon, I would suggest giving, as an initial dose to a patient who has not taken any digitalis recently, 1 minim per pound of body weight. Allow two hours for this to produce an effect, and if another dose is necessary, give ¼ of the first dose. This ¼ minim per pound of body weight dose may then be repeated, if further stimulation seems necessary, until four of these doses have been given at two hour intervals. The greatest caution must be observed to avoid giving further doses after toxic digtalis effects have appeared. Arhythmia and tachycardia are sometimes due to digitalis intoxication and may be wrongly attributed to an aggravation of the cardiac condition.

If the patient shows definite improvement after the first dose, no further intravenous doses will be necessary, for the effect may be continued by oral administration. I prefer these digitalis preparations to Ouabain because of the wider margin between the therapeutic and the toxic doses of digitalis.

When a patient, who has been receiving digitalis recently is found to be in a state demanding intravenous therapy, the problem of dosage is more difficult. We must proceed more slowly in order to avoid giving a toxic dose. It seems proper to give the dose of ¼ minim per pound of body weight and to repeat this at intervals of thirty minutes to an hour, until four doses have been given. After this the intervals should be lengthened to two hours. Here again careful observation for toxic heart rhythm should be made before repetition of the dose.

Doses of this sort have been used repeatedly during the last year or two, and there has not come to my attention any evidence of harmful effects. As to the use of smaller doses than those recommended, in patients without previous medication, it has been found that doses of 15 to 30 minims produce a very slight, scarcely perceptible effect upon the heart rate of patients with auricular fibrillation, and usually no effect or only the slightest upon the T wave of the electrocardiogram. As a therapeutic procedure, I feel that such doses are quite inadequate for the treatment of an emergency. In previously treated cases, a dose of 30 minims may produce a definite, though moderate, slowing of the rate, and thus have some therapeutic effect. This dose may be close to the ¼ minim per pound of body weight dose recommended above for the continuation of previously treated patients, and may be repeated as recommended.

Section of Obstetrics and Gynecology,

February 28, 1928

SPONTANEOUS RUPTURE OF PYOSALPINX INTO THE URINARY BLADDER

S. DI PALMA and M. M. STARK

The authors report a case of pyosalpinx which ruptured into the urinary bladder a few days after the patient's admission into the hospital.

The patient was cystoscoped prior to and after the rupture and later was operated upon and site of attachment of the pus tube to the urinary bladder found. While no communication was present at this time, a marked adherence of the pus sac to the viscus existed which necessitated separation and Lambertizing of the bladder wall.

The literature was searched carefully for cases of this type and 34 including the authors' case were found. Most of these cases have been reported in the foreign literature.

As the opening in the case reported could not be visualized by cystoscopy, 20 per cent. sodium iodide was injected through a needle which had been thrust into the pus cavity through the cul-de-sac, and a skiagram taken which showed pus sac and the laking of some of the fluid in the bladder.

The fluid from the bladder was also examined and immediately after the injection through the cul-de-sac the presence of iodide was detected.

The article deals with the cause, pathology and treatment of this condition.

The following are the conclusions:

Spontaneous rupture of pyosalpinx into the urinary bladder is extremely rare.

The symptoms are clinically characteristic; following sharp pelvic or suprapubic pains, there appears in the

urine large quantities of frank oftimes foul smelling pus, after which there is a drop in temperature, a relief of urinary and vesical symptoms and a decided improvement in the general condition of the patient.

Cystography and cystoscopy add convincing data to an otherwise obvious clinical diagnosis.

A patent ostium is not always visible in the bladder wall; on the other hand, an isolated area of edema or redness with a crater-like central depression, together with pelvic pathology, is presumptive evidence of impending ulceration of rupture. The site of the rupture is usually on the lateral wall, just beyond and to one side of the ureteral opening. An absolute diagnosis is reached by X-ray after filling the pus cavity with roentgen-ray opaque fluid, transvesically or by the authors' method.

A rupture may heal spontaneously, as may also the original abscess; it may recur several times, as is the case in those patients who present themselves in poor general condition, the result of chronic invalidism.

Operation by laparotomy to remove all disease is the proper method of treatment; this is best undertaken when the temperature is levelled and the white cell count less than 10,000.

The fistulous communication between the pus sac and the bladder cannot always be found at the time of operation. When it is found, however, it is given the necessary surgical attention. Drainage by indwelling catheter and by gauze through the vaginal vault is recommended.

A SIMPLIFIED METHOD OF TESTING TUBAL PATENCY

I. Seth Hirsch and N. Schnayerson

The presentation has a two-fold object: First, to suggest certain physiological considerations bearing on the method by which material entering the cervical canal is carried

to the ovarian neighborhood; and secondly, to present for your consideration a simple test which when elaborated may permit us to determine graphically the tubal patency and give at the same time an idea of the topographical conditions within the pelvis.

Bond placed carmine particles in the vagina of a rabbit and recovered them in the peritoneal cavity. The so-called regurgitation of tubal and uterine epithelium through the fallopian tubes, into the free pelvic cavity has been proven by Sampson. He was able to demonstrate these epithelial cells and bits of free lying epithelium and stroma identical with that found in the uterus in blood collected from the fimbriated ends of the tubes during laparotomy. In eight out of fourteen cases in which the laparotomy had been preceded by a dilation and curettage, smears taken from the tubal extremity revealed epithelial cells. He has also found carcinoma cells in the tubal lumen following diagnostic curettage for carcinoma of the body of the uterus.

Davis and Cron have reported a case which seems to indicate quite definitely that an increase in intra-uterine pressure may force bits of endometrium backward through the tube, and Allen has recently corroborated by clinical and experimental evidence the fact that any operative procedure which increases intra-uterine pressure may displace endometrium into the peritoneal cavity.

Suspecting that the element of pressure was not an important factor, we repeated the experiment of Williams and Reynolds of attempting to instil an emulsion of contrast salt into the uterine cavity. It was, however, found impossible to avoid forcing this mixture through the uterus into the tubes, no matter how carefully the injection was made. These injections also proved definitely that a few drops of properly prepared mixture were sufficient to outline the uterine cavity and the tubes. In order, therefore, to reduce the factor of intra-uterine pressure to the minimal, the contrast salt was put into the form of a small

suppository of a shape and size which permitted its insertion into the cervical canal.

We have been able to prove that upon the insertion of such a suppository within the cervicall canal, the body temperature reduces the suppository to an emulsion of contrast salt, which is then carried rapidly out of the uterus, through the tubes, into the peritoneal cavity and that in this transmission increased intra-urine pressure plays no part. The transmission is probably effected through the agency of muscular contraction, tonicuterine and peristaltic tubal, although the possibility of a suction mechanism has been suggested. This brings up the question as to whether the motility inherent in the spermatozoön plays an important part in its reaching the ovarian neighborhood. The motile power may functionate in bringing it into the cervical canal. From this point, however, its passage into the ovarian region, if it reaches this region, is probably made through the same agencies and with the same rapidity as the fine particles of contrast salt in our experiment. It also answers the doubts of Novak, who questioned whether a piece of endometrial tissue could be regurgitated through the minute, often tortuous interstitial portion of the tube and whether it could pass the pelvic cavity against the ciliated current of the tubal epithelium. It also raises the question as to just what the function of the ciliated epithelium is.

On the basis of this experiment, it seemed justifiable to infer that this method might be utilized as a test for tubal patency. Thus, if at the end of a certain number of hours, the contrast salt could be seen in the peritoneal cavity, the inference of tubal patency would be justified. By CO_2 tubal insufflation and lipiodol injections, a check up of cases on which such a test was applied seems to prove that this hypothesis is correct.

Section of Pediatrics, March 8, 1928

THE SEX FACTOR IN INFANT MORTALITY [1]

(ABSTRACT)

HARRY BAKWIN

Sex is an important factor in determining the outcome of disease during infancy. During the ten year period from 1915 to 1924 inclusive, there were from 130 to 134 deaths in white male infants under one year from all causes to 100 deaths in white female infants under one year, in the United States Birth Registration Area. Since the proportion of males to females at birth during that period was approximately 106 to 100, it is apparent that the death rate in boys is considerably higher than that of girls during the first year of life. This hypersusceptibility on the part of the male is evident before birth. Schultz found marked variations in the sex ratio of stillbirths from month to month. During the third and fourth months of gestation the ratio is high (121—117.5). In the fifth to the seventh months it declines markedly (101.9), rising again in the eighth to the tenth months to a much higher figure than any previous period (165 males to 100 females).

Variations in the Mortality Sex Ratio During the First Year of Life. At birth the sex ratio is high (140). It rises markedly on the third day (to 147) after which it falls gradually until the third week. It then rises again, reaching another peak in the second month of life after which it declines gradually.

The Mortality Sex Ratio and the Death Rate. It has been found that as the infant mortality rate has fallen

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the sex ratio rises. In such countries as Sweden, and England and Wales where mortality records have been kept for a great many years, the fall in the death rate has been accompanied by a rise in the sex ratio. Most other countries also show this increase in the sex ratio as the infant death rate has declined. Thus in the decade 1841-1850 the infant death rate for England and Wales was 153 and the mortality sex ratio 122. Coincident with the fall in the death rate starting after 1900, the ratio began to rise so that in 1926 with a death rate of 70 the sex ratio was 130. The ratio has risen not only for infants under one year, but for all age subdivisions under one year and for children during the first five years of life.

Environmental Factors Influencing the Mortality Sex Ratio

Regional Differences in the Mortality Sex Ratio. For the same death rate the mortality sex ratio in different countries varies. The ratio is higher in England, Wales and Scotland and low in Italy, Jamaica, Japan and Spain.

The Mortality Sex Ratio for Urban and Rural Communities. The infant mortality rates are regularly higher in the U. S. A. for urban than for rural communities. Though the death rate is higher, the sex ratio, contrary to what one might expect, is also higher. Urban life is apparently not only less favorable for both sexes but is particularly unfavorable for the male.

Seasonal Variations in the Mortality Sex Ratio. The mortality sex ratio for infants under one year of age is high during the winter and low during the summer months. This is true for diseases with a high winter death rate, *e.g.,* pneumonia, as well as for those with a high summer death rate, *e.g.,* diarrheal diseases. For infants during the first month of life the curve is reversed, the mortality sex ratio being higher during the summer months,

but after the second month of life the mortality sex ratio for infants under one year is regularly high during the winter and low during the summer.

It is suggested that the climatic, regional and seasonal variations in the mortality sex ratio during infancy are dependent on the different quantities of sunlight which reach the infant. England, Wales and Scotland are notoriously poor in sunlight, while Italy, Jamaica, Japan and Spain are countries which abound in sunlight and which have populations that live to a large extent outdoors. It seems reasonable to suppose that infants in rural communities get more sunlight than do those in the city where life is to a much larger extent confined to indoor living and where sunlight, particularly the ultraviolet portion, is absorbed by dust and smoke. That the quantity of sunlight reaching the infant during the summer months is greater than during the winter months is obvious.

Some of the harmful factors of the absence of sunlight for infants are now well known. Ultraviolet radiant energy or a substitute is of the greatest importance in regulating calcium metabolism. It is necessary for the proper deposition of calcium in bone and for the maintenance of a normal calcium concentration in the circulating fluids.

It has been found that the calcium regulatory mechanism in males is much less stable than in females. In a series of 168 patients infantile tetany occurred more than twice as often in boys as in girls. Whether or not rickets is more common in boys than in girls has not yet been determined.

It seems reasonable to assume that the season of the year at which the sex ratio is lowest represents that regional climatic environment most favorable for the male. If the mortality sex ratio during the entire year could be reduced to its lowest seasonal level many deaths would be prevented. During the five year period studied for the preparation of the chart on seasonal variations (1918-1922) there were 645,903 deaths from all causes in infants in the

U. S. Birth Registration Area with a sex ratio of 133.8. If this ratio had been 126.5 instead, the lowest point reached by the ratio for that period, the lives of approximately 21,000 males would have been saved. This calculation is only for the birth registration area of the United States which constituted 53 per cent. of the population in 1918 and 72 per cent. in 1922.

It is therefore of more than academic interest to know what the environmental factor or factors are which react so unfavorably on male infants. If the hypothesis suggested above proves to be true, namely that variations in the amounts of sunlight through the stabilizing effect on the calcium regulatory mechanism determine the regional and seasonal differences in the mortality sex ratio, then a method for the reduction of the mortality sex ratio by means of artificial sunlight or a substitute is strongly indicated.

CONGENITAL INTESTINAL OBSTRUCTION

Richard W. Bolling

The diagnosis in the majority of cases of congenital intestinal obstruction may be made promptly and certainly, and in a considerable proportion of these cases the anatomical conditions afford a very promising field for surgical endeavor.

This paper treats of stenosis and atresia of the intestinal tract and volvulus secondary to abnormal intestinal rotation, excluding congenital stenosis of the pylorus and malformation of the anus and rectum, as well as those cases of chronic intestinal obstruction due to anomalies in rotation manifested later in infancy and early childhood. The author's personal experience comprises fourteen cases, one of abnormal rotation with volvulus and thirteen of intestinal occlusion, extrinsic or intrinsic. In seven of these cases the anatomical conditions were such

as to make them peculiarly amenable to surgical treatment. In one the condition was not recognized during life. Six were operated on and four survived.

Congenital occlusion of the intestine is most often single and usually complete. The duodenum is the favorite site except in the event of multiple occlusions when the jejunoileum is most frequently involved. The colon is least frequently affected. When the occlusion is incomplete there may be a simple narrowing or a perforated diaphragm. When complete there may be absence of a segment, a portion of the bowel may be replaced by a fibrous cord or the lumen may be occluded by a septum.

The bowel above the obstruction is dilated, often extremely so and the walls are hypertrophied. If the obstruction is above the papilla of Vater there will usually be an absence of bile but as was shown by Cordes, bile may be present both above and below the obstruction. Below the obstruction the bowel is wormlike in appearance, usually owing to want of distention rather than to want of development.

Associated malformations may occur but are not common. The most frequent is anorectal imperforation.

No one theory of the causation of these defects can explain all cases. In the order of frequency, (1) developmental defects, (2) fetal accidents (3) and fetal diseases may be mentioned.

The congenital type of volvulus is the result of congenital deficiency in the attachment of the mesentery of the small intestine and lack of fixation of the ascending colon. Violent peristalsis or sudden effort may cause abnormal rotation, partial and recoverable, producing only transient symptoms, or complete and, if unrelieved, fatal.

Symptoms. Complete atresia is incompatible with life and causes symptoms shortly after birth. When the obstruction is incomplete, particularly when it is situated in the duodenum, the length of life is sometimes surprising.

Vomiting, beginning soon after birth, usually as soon as feeding is begun, is the leading symptom. At first the vomiting may occur only when food is taken but later is persistent and independent of feeding. In the majority of cases the vomitus is bile stained. In the cast of stenosis vomiting may be greatly delayed.

The character of the stools depends upon the situation of the obstruction. If above the opening of the bile duct typical meconium is passed in varying amounts. If below the papilla the stools are very scanty and usually consist of small amounts of greyish mucus. When the obstruction is incomplete the stools are at first typical meconium, later changed by the small amount of milk which passes the stenosis.

Distention is present in most cases and the degree is determined by the situation of the obstruction. In cases of duodenal atresia distention is limited to the upper abdomen. Peristaltic waves may be noted passing from left to right. Distention of the whole abdomen is noted when the obstruction is lower in the intestine. In such cases irregular peristaltic waves may be seen and the dilated intestinal coils palpated.

Progressive loss of weight and dehydration are evident. In any case of persistent vomiting in a newborn infant roentgenographic examination is imperative and will usually give definite information as to the presence and site of the obstruction. An opaque meal or enema may be given with safety in the earliest infancy.

In the case of volvulus imposed on abnormal rotation the infant remains apparently normal for a varying period after birth. Meconium is passed and subsequently milk stools. With the onset of volvulus the symptoms are those of duodenal obstruction.

Diagnosis. To be differentiated are:

1. Malformation of the anus and rectum.
2. Internal hernia with strangulation.
3. Pyloric stenosis.

Imperforate anus may be complicated by atresia of the intestine. If, in a case of imperforate anus the intestinal contents are grey and pasty it is reasonable to assume the presence of obliteration of the intestinal lumen higher up and below the bile duct. An obstruction of the rectum may usually be demonstrated by digital examination.

The strangulation of an internal hernia would probably be very difficult to diagnose unless the hernia were diaphragmatic in which event the thorax would show characteristic signs.

Pyloric stenosis rarely gives rise to symptoms at so early an age and is excluded by the roentgenogram and by the absence of tumor.

Treatment. In atresia or stenosis, entero-anastomosis is the operation of choice. When the duodenum is involved, duodeno-jejunostomy is preferred to gastro-enterostomy. Of the four cases operated upon by the author for intrinsic obstruction of the duodenum there were three instances of atresia. In one of these a gastro-enterostomy was done and the patient died on the twenty-third day as a result of wound infection due to an infected umbilicus. In the second case an anterior duodeno-jejunostomy was done and the patient is now two and a half years old. A posterior duodeno-jejunostomy was performed in a similar case recently discharged. In the fourth case, one of stenosis of the duodenum, a posterior duodeno-jejunostomy was carried out and the patient is now seventeen months old.

In the case of volvulus the intestines should be untwisted and restored to as normal relations as possible. In the one case of this condition observed by the author, the volvulus recurred and a second operation was necessary twenty days after the first. This child is now four years old. It is probably desirable to fix the cecum by suture in as nearly normal a situation as possible to prevent recurrence. In the obstructions lower down entero-anastomosis is indicated, possibly with the addition of a temporary enterostomy.

A POSSIBLE CAUSAL FACTOR OF FOOD ALLERGY IN CERTAIN INFANTS

BRET RATNER

An explanation has been sought for allergic manifestations—vomiting, urticaria, etc., which occur when certain children come in contact with a particular food for the first time, eczema, asthma, etc., following upon continued exposure.

The theory is voiced that these infants have been actively sensitized in utero because of the mother's overindulgence in certain protein foods during pregnancy.

Cases are presented to exemplify this type of allergic phenomenon, having been chosen from a group gathered over a period of seven years.

Experimental evidence is presented to show that:

1. In human beings and guinea-pigs the placenta is permeable.
2. Proteins may pass from the maternal to the fetal circulation through the placenta in the human being and in the guinea-pig.
3. The human fetus and the guinea-pig fetus can be actively sensitized in utero.
4. Proteins can enter the circulation in an undigested state from the maternal intestinal tract and thereby gain entrance into the fetal circulation.

The conclusion drawn is that under certain conditions an infant having a predisposition for allergy may become actively sensitized in utero, because of the mother's overindulgence in certain protein foods during her ante-partum period, and after birth, when coming in contact with this food for the first time, her child will manifest some form of allergic phenomenon.

If this be true, it is hoped that the development of such cases of protein hypersensitiveness may be prevented by the careful regulation of the ante-partum diet.

Section of Otology, March 9, 1928

PRIMARY JUGULAR BULB THROMBOSIS *

JACOB L. MAYBAUM and IRVING B. GOLDMAN

Because of an apparently unimportant, vague or indefinite aural history in cases of primary jugular bulb thrombosis, the condition is more likely to be seen at the onset by the internist or pediatrist rather than the otologist. For similar reasons, these cases are usually seen in general, less frequently in special, hospitals. The importance of early diagnosis becomes evident when we realize that in order to obtain a favorable outcome of this serious illness, prompt surgical interference is imperative.

The subject of primary jugular bulb thrombosis was first brought to the attention of the American medical profession by McKernon in 1904. At that time he referred to the relationship which exists between an apparently unexplained septic temperature and an acute otitis media. The diagnosis, difficult at times even now, was all the more so at the time of McKernon's report, as his work antedated the very important blood culture studies of Libman in 1906. Recent differential blood culture investigations of Ottenberg, to which more extended reference will be made later, have contributed still further to the early recognition of this condition.

The term primary bulb thrombosis is employed to designate the formation of an infected thrombus in the dome of the jugular bulb, the lateral and sigmoid sinus not being affected by the thrombosis in the initial stages of the lesion. It occurs usually in young children. The bony partition separating the middle ear cavity from the jugular bulb is often extremely thin. An unusually high dome or roof of the bulb, may encroach upon the floor of the middle ear. An added factor is the frequent presence of dehiscences in the floor of the tympanic cavity and as a result there may be direct contact between the floor of the middle ear and the dome of the bulb. The mastoid in

*From the Otological Service of Mount Sinai Hospital, New York City.

young children not infrequently shows a congenital absence of cells. Under conditions such as these, it can be readily seen how an active purulent middle ear infection may primarily invade the blood current, attacking the bulb, the pathway of infection being through the small communicating veins and lymphatics or by a destructive process through the bone. An infection in the tympanic cavity may first involve the carotid plexus of veins situated along the anterior tympanic wall; from there the infection may pass directly into the bulb and thus produce a primary bulb thrombosis. It is important to remember that the jugular bulb may become directly infected as a result of an acute inflammatory process in the middle ear, without evidence at any time of middle ear discharge.

A study of the cases reported in this paper will serve the purpose of elucidating the clinical course pursued by this disease. The onset may be insidious, the aural history being so indefinite as to escape the attention of those who see these patients first. In one instance, case A. H., there was a history two months previous to admission, of fleeting pain in the right ear of twenty-four hours duration; at no time was there any middle ear discharge. A diagnosis of primary bulb thrombosis was finally made and the relationship between the prolonged sepsis and a negligible ear history was established and confirmed at operation. In the majority of instances, aural examination discloses evidence of a subacute otitis media purulenta or of a beginning middle ear resolution without mastoid involvement. The drums are flat, thickened and the short process or hammer handle is evident. The hearing may be only moderately impaired.

Aside from a history of an acute otitis media, the only symptom of importance is a fluctuating temperature between 99° F. or 100° F. and 104° F. Not infrequently the temperature runs a low course, 100° F. or 101° F., for a few days, followed by a rapid rise and fall. Most of our cases have come to us with such a history of two or three weeks duration. As a rule these patients do not have

a distinct chill, they may, however, have chilly sensations. If the rapid fluctuations in temperature continue for a few days, pallor becomes quite evident, and the tongue appears white and dry. The following symptoms associated with a more or less definite aural history arouses one's suspicion of the presence of a bulb thrombosis even before the report of a positive blood culture: Pallor, dry tongue, an enlarged spleen, enlarged and tender lymph glands at the angle of the jaw and early changes in the ocular fundi. The blood count shows a leucocytosis, 12,000 to 15,000 and a highly polynucleosis, 75 per cent. to 85 per cent. Daily estimation of hemoglobin percentage and red blood cell count points to a progressive secondary anemia. The diagnosis can be made, in the presence of a sepsis unaccounted for by any other demonstrable lesion, by a history of an acute middle ear suppuration and a positive blood culture.

Valuable aid in the diagnosis and localization of sinus thrombosis has resulted from the recent blood culture studies of Ottenberg. Blood is taken simultaneously from both jugular veins, cultured and the colonies counted. In a suspected case of sinus thrombosis, a preponderance of bacteria may be found in the blood obtained from the vein on the normal side as compared with that from the diseased side. The procedure was done by Ottenberg in three of our cases of suspected primary bulb thrombosis with striking findings. These findings apparently point first, to the presence of an occluding thrombus; secondly, in bilateral involvement, the disproportionate bacterial growth is strongly suggestive, from the cases thus far studied, of an involvement of the sinus on that side from which the lesser number of colonies is obtained. This work further indicates the extreme importance of careful surgical procedure to arrest systemic invasion, by thoroughly dealing with the torcular end of the diseased sinus, the jugular vein having been previously ligated.

From Ottenberg's studies it appears that in the presence of an occluding thrombus involving the jugular bulb

and lateral sinus, the general systemic invasion is produced, in large measure, as a result of the free circulation of blood at the torcular end of the thrombus; the infection is carried by way of the sinuses on the normal side; the circulation at the upper end of the jugular vein and bulb on the diseased side is far less active.

As to the indications for a jugular bulb operation and the surgical approach to the bulb; in a majority of instances operative procedures upon the bulb are unnecessary. If sepsis continues despite thorough surgical measures directed to the torcular end of the sinus and evidence points to suppuration in the jugular bulb, our indications are to deal with the focus in the bulb. The question of the presence of suppuration in the bulb is determined by our ability to cause puss to well up into the mastoid cavity from the bulb, upon pressure over the tender swelling which is present at the angle of the jaw.

Blood transfusion is not necessarily indicated in all cases of sepsis of otitic origin. These patients should not be subjected to the added danger of transfusion, even though the possibility of an untoward result might be remote, when the clinical course and physical condition following well directed surgical management give every indication of being satisfactory.

Blood transfusion may be useful pre-operatively. Patients in serious condition as a result of sepsis of comparative long standing withstand operations better if given a transfusion pre-operatively. A blood transfusion is usually done immediately after operation. As to subsequent transfusions, in recent years we have recourse to these only if the general condition, especially as indicated by a decreasing hemoglobin and red blood cell count, warrant it. We do not favor the indiscriminate use of blood transfusions in these cases.

The following is a summary of the nine cases of primary jugular bulb thrombosis reported from the service of Dr. I. Friesner at Mount Sinai Hospital.

SUMMARY OF CASES

Aural history: *Cases*

Bilateral middle ear suppuration..... 1
Acute purulent otitis media..... 7
Acute otitis media (no otorrhea)..... 1
Chronic purulent otitis media, central perforation, mild acute exacerbation 1

Type: Mild: Recent acute otitis media or resolving
History of repeated attacks of acute otitis media..... 7

General symptoms:	*Cases*	*Ocular fundi:*	*Cases*
Chills	4	Optic neuritis	3
Septic temperature	9	Early to advancing Papillo-edema	2
Headache	3		
Vomiting	2		
Spleen enlarged	3		
Liver enlarged	3		
Cervical glands enlarged and tender	4		
Cutaneous (maculo-papular and pustular)	5		
Operative findings:			
Acellular (sclerosed)	8		
Mastoid cells (not involved)	1		
Sinus plate: intact	9		
Sinus wall: diseased	9		
Sinus contents: purulent obturating thrombus	7		
fluid pus	1		
thrombus not demonstrable	1		
Bleeding			
bulb: absent	8		
torcular:			
Yes	4		
No.	2	(Free bleeding from superior petrosal.)	
Doubtful	3		

Post-operative Course

Metastases and complications:

Five cases:
- Tempero-sphenoidal abscess 1
- Pulmonary: Bilateral embolic process..... 1
- Joints and soft parts 3
- Sympathetic meningitis 1

Fundi: post-operative: Four—negative
Five—increased changes and then recession to normal.

Outcome: Eight cases recovered. One deceased.

Blood Cultures

Before and after operation: Eight of the nine cases had a positive blood culture, seven—hemolytic streptococcus, one—nonhemolytic streptococcus. One case, negative before operation, was positive after operation. Two cases were negative after operation and remained so. Seven cases were positive for a time after operation. In one case (J. S.) blood cultures were persistently positive for five weeks (Recovered).

Differential blood cultures were done in two of these cases. The first of these (A. S.) had a bilateral otitis media; the problem of which side to operate upon, therefore, confronted us. These cases had a marked preponderance of bacterial growth in the blood cultured from the internal jugular vein on the sound side as compared with the blood taken from the vein on the diseased side. Similar findings were present in an additional case seen by Ottenberg in another hospital. One of our cases (not a primary bulb) at Mount Sinai Hospital, had a preponderance of bacterial growth in the blood obtained from the jugular vein on the *diseased* side.

Below is appended, in outline form, Ottenberg's differential blood culture findings in a number of cases. The first three were primary bulb cases (two reported in this paper). The fourth and fifth were cases of sinus thrombosis secondary to mastoiditis. The sixth was a case of bacterial endocarditis:

Conclusions

1. A mild middle ear infection in young children, associated with a septic temperature otherwise unaccounted for, suggests the possibility of a Primary Jugular Bulb Thrombosis.

2. For a favorable outcome, early diagnosis and prompt surgical interference, properly directed, is imperative.

3. Blood culture studies of Libman and more recently of Ottenberg materially aid in the diagnosis.

A. Cases of Occluding Sinus Thrombosis

Name	*Findings*	*Side*	*Occlusion*	*Organism*	*Colonies per c.c.* *Rt. Int. Jug*	*Lt.*	*periph*
(1) Stern	Sinus thrombosis	L		Streptococcus	278	9	
(2) E. M.	" "	R		Hemolyticus	15	67	
(3) Nuna	" "	L			25	8	
(4) Grant	" "	L			122	7	6
"					255		22
"			(Post-operative)		356		78

B. Case of Mural Thrombosis of Sinus

(5) Sontag	Sinus thrombosis	L	O	Streptococcus non-hemolytic	16	142	

C. Other Condition

(6) Sugarman	Bacterial endocarditis	—	—	Streptococcus viridans	14	10	16

4. Occlusion of the main channels of systemic invasion, especially the torcular end of the diseased sinus, as suggested by Ottenberg's differential blood cultures studies, is of prime importance.

5. A jugular bulb operation should be performed only if there is a continuance of bacteriemia and symptoms, general and local, after the main channels have been obliterated. Extensive jugular bulb operations are seldom indicated.

Section of Neurology and Psychiatry, March 13, 1928

A CASE REPORT OF TORULA MENINGITIS

S. Bernard Wortis and Henry B. Wightman

A. H., male aged 20, single, American, chauffeur by occupation, was admitted to Bellevue Hospital on August 26, 1927, complaining of pain in the eyes and headache of three months' duration.

History

Past. Essentially negative.

Family. Father died of tuberculosis at the age of 27. Mother, two sisters and one brother living and well.

Present Illness

(Obtained from the patient and the patient's mother).

Three and one-half months before admission the patient noticed a slight haziness of vision and headaches. The onset was insidious and the headaches were not severe, nor were they present at all times. They became of increasing intensity and were associated with a definite drowsiness and mental confusion. Three weeks before admission the patient vomited when the headaches were most severe.

The patient consulted an oculist who prescribed glasses, which gave him no relief. He was treated in the Out-Pa-

tient Department for a "head cold," and was finally admitted to the Nose and Throat service with the diagnosis of sinusitis.

Physical examination at the time of admission revealed a fairly well developed and well nourished young man lying quietly in bed, apparently in pain, but not acutely ill.

Head. Tenderness over the frontal sinuses on percussion.
Eyes. Pupils normal.
Fundo. Marked papilledema with exudation and hemorrhages with obliteration of both disks and distention of the veins.
Nose. Bilateral hypertrophy of the turbinates.
Sinuses. Antra clear, sphenoid—left contains pus.
Pharynx, larynx and ears negative.
Mouth. Teeth in poor condition.
Neck. Rigidity, painful to flexion.
Chest. Lungs and heart negative.
Abdomen. Negative.
Extremities. Weakness of the right hand. Fine tremor of the left fingers with the arm extended.
Legs. Left K. J. not obtained. Right questionable.
Temperature 99.8. Pulse 84. Respirations 20.
Blood Pressure 130/70.

Laboratory Tests

Urine negative.
Blood. R. B. C. 4,200,000. Hemoglobin 80 per cent.
W. B. C. 12,400—81 per cent. polymorphonuclears 19 per cent. lymphocytes.
Chemistry. Non-protein nitrogen 30. Sugar 90. Creatinin 1.5.
Wassermann test. Negative.
Spinal fluid. Increased pressure, slightly turbid.
Cells 180, 88 per cent. lymphocytes.
Globulin increased.
Culture no growth.

A diagnosis of left frontal abcess was made and the patient was removed to the neurological service.

Additional Findings in the Neurological Status

Cranial nerves.

1. No coöperation.
2. Fundi as above. Fields concentric constriction.

3, 4, 6, pupils normal, no nystagmus.

5, 8, 9, 10, 11, 12, normal.

7. Some peripheral weakness of the right face.

Power and coördination.

Good in all extremities. No asynergia of the arms or legs. Station and gait not tested. Fine tremor of the left fingers with the arm extended.

Reflexes.

Superficial. Corneals present and equal.
Abdominals weak and transient.
Plantar normal. No Babinski.
Deep. Arms present and equal.
Knee, ankle and hamstring jerks greater on the right.

Sensation. No changes.
Position. No coöperation.
"Tache" Cerebral. Present.
Stiff neck and a bilateral Kernig sign.

Meningococcus meningitis was suspected because of the increasing meningeal signs. A spinal tap on the fifth of September, ten days after admission, revealed a fluid that had a glazed appearance, with slightly increased pressure, globulin three plus, sugar absent, cells 540 per c. mm. 90 per cent. lymphocytes. Pellicle formed on standing. Stained smear revealed no organisms and culture showed no growth.

The patient became increasingly drowsy.

Antimeningococcus serum, 20 c.c., were given intraspinally on the seventh of September. The 40 c.c. of the spinal fluid removed showed a moderately cloudy fluid

under slightly increased pressure, globulin three plus, sugar absent, cells 600, 94 per cent. lymphocytes. The spinal fluid Wassermann reaction was negative, the colloidal gold curve was 5554331000. A distinct pellicle formed on standing. A smear of this pellicle showed an occasional dark staining round body, the size of a small lymphocyte. Also the cells appeared to be degenerated. Culture of the fluid showed multiple white elevated colonies appearing after forty-eight hours. Smear of these colonies showed round Gram-positive bodies which after further incubation disclosed the budding forms of yeasts. No mycelia were noted. There was no acid or gas noted in any of the following sugars: lactose, dextrose, maltose, saccharose, mannite or inulin. There was no acid reaction or coagulation in litmus milk. Repeated staining by the Ziehl-Nielson method for the tubercle bacillus was negative.

Two cubic centimeters of the spinal fluid were injected into the peritoneal cavity of a guinea-pig at this time. The guinea-pig was alive and healthy after six months when it was killed. Autopsy of the guinea-pig showed no gross pathology. There was the suggestion of an inflammatory reaction about the site of inoculation, but on microscopical section this was found to be nothing more than a beginning degeneration of the recti muscles.

The antimeningococcus serum had no effect.

On the following day, the eighth of September, .2 c.c. of Old Tuberculin was injected intradermally which gave a local but no focal reaction. There was a slight rise in temperature to 100.2°.

Throughout his stay in the hospital the patient's temperature remained at 99° with only two rises, one to 101.2° and the other to 102°. The pulse remained at 80 and the respirations at 21.

Spinal taps were performed daily for the relief of pressure. The findings were: On the ninth of September 20 c.c. of a cloudy fluid was withdrawn under increased pressure, globulin four plus, sugar absent, cells 480, lympho-

cytes 60 per cent. A pellicle formed on standing. Smear and culture as above. Samples of this fluid were given to Dr. Josephine B. Neal of the Board of Health Laboratories in New York City who identified the organism as the torula by smear and culture.

The patient became noisy, restless, irrational and incontinent of urine and feces. He complained continuously of headache and stiff neck.

Daily spinal taps from the eleventh to the day of his death showed a cloudy fluid under increased pressure, globulin four plus, no sugar, 460 cells of which 60 per cent. were of the lymphocyte type. On the fifteenth of September, the day before his death, the cell count rose to 1600 with the same proportional differential count.

The patient was irrational, stuporous, lying with his back arched and his neck stiff. He also had difficulty in swallowing fluids. He developed the signs of a bronchopneumonia and died on the following day.

The necropsy was refused.

This case is the twenty-third torula infection reported in man, ninteeen of which have occurred in the central nervous system with a fatal termination. The essential features of the cases reported in the central nervous system are their insidious onset, their chronicity, the low grade of fever, the slow rate of the pulse and respirations, the negative blood and serological findings, and the spinal fluid changes. The latter closely simulate tuberculous meningitis with the increased globulin, the absent sugar, the relatively low cell count, the lymphocytosis and the pellicle formation. The accurate distinction is only made by the isolation of the torula organism either from the pellicle or from cultures.

Clinically the picture is that of a subacute or chronic meningitis or an intracerebral lesion (tumor or abcess). There are no features characteristic of this type of infection. Diagnosis is possible only by detection of the organisms in the spinal fluid or in the tissues at necropsy.

We wish to thank Dr. Foster Kennedy, chief of the Neurological Service, and Dr. Douglas Symmers, Director of Laboratories at Bellevue Hospital, for their courtesy in permitting us to report this case.

THE SYNDROME OF DIABETES INSIPIDUS, EXOPHTHALMOS AND DISEASE OF THE MEMBRANOUS BONES

(ABSTRACT)

LOUIS HAUSMAN and WALTER BROMBERG

This unique symptom complex is of particular interest in its bearing on the mechanism of diabetes insipidus and the possible relation of the latter to the disease of the membranous bones.

Case report: Boy, three and one-half years old, with a history of exophthalmos, polydipsia and polyuria. Ancestry of the child revealed no pertinent facts. Mother and father are living and apparently perfectly well. A brother, one year old, so far has developed normally. At birth the patient suffered apparently from asphyxia neonatorum and convulsions, following protracted labor. This condition disappeared soon after birth. Up to the age of one and one-half years, he had repeated attacks of bronchitis. At the conclusion of the last attack, measles developed.

Present illness began about one and one-half years ago, at the age of two, when the mother noticed that the child was drinking and passing large amounts of water and that his eyes were becoming quite prominent.

Examination on admission revealed an undersized boy, measuring 78 cm., but well proportioned; mental status, normal; a most astounding and progressive exophthalmos; bilateral Babinski; marked diabetes insipidus with an intake of about 6000 c.c. daily and a corresponding output.

Osseous system: Radiography revealed a remarkable picture in the skull, consisting of large sharply defined defects particularly in the frontal and temporal regions, as if the bone had been eaten away by a rongeur. Sella turcica normal. Rest of the skeletal system entirely negative. Sugar tolerance was definitely increased. The serology of the blood and spinal fluid was negative.

Course: 1) Exophthalmos: progressive. 2) Dysostosis: progressive, spreading to the parietal, orbital, malar and mandibular areas; sella normal in all plates. 3) Diabetes insipidus: Prompt relief with daily injections of pituitrin.

Treatment: Various treatments were tried. The only one of value was the pituitrin, which influenced water metabolism.

Ultraviolet radiation, calcium lactate, cod-liver oil and parathormone were all tried without any apparent benefit.

A survey of the literature reveals twelve other cases. In each instance the membranous bones of the skull were involved, although in several cases other parts of the skeleton were also invaded. The disease occurs chiefly in children. The pathogenesis is unknown, although the incidence of antecedent infection is high. The course is progressive in most instances.

The evidence points to the tuber cinereum as the seat of the lesion, in which the tubero-infundibular mechanism is especially involved. The latter is apparently mediated through a bundle of nerve fibers from the nucleus supraopticus of the tuber cinereum to the infundibular process, so that the latter is under the influence of the former. This functional and anatomical continuity is in keeping with the embryologic facts. The relation of this mechanism to the anterior pituitary lobe and to the process of growth, dysostosis, carbohydrate metabolism and adiposogenital dystrophy was also considered in the light of recent experimental data.

The conclusion was reached that the dysostosis may be interpreted as a parainfundibular manifestation. The

study was extended to the consideration of some of the other osseous dystrophies, such as: 1) The hereditary cleidocranial dysostosis described by Marie and Sainton, 2) the familial craniofacial dysostosis described by Crouzon and 3) Paget's disease. A critical analysis of these conditions strongly suggests the possibility that they are all closely allied to the type herein described.

TRAUMATIC PNEUMOCEPHALUS, OPERATION AND RECOVERY *

THEOPHILUS P. ALLEN

In May 1926 Dandy [1] reviewed the literature on pneumocephalus and analysed twenty-eight case reports, three of which were his own. In December of the same year Bullock [2] made a similar study analysing sixteen cases including one of his own and not including Dandy's three. Since then Davidson, [3] Eggers, [4] Jean and Villechaise, [5] Jansson, [6] Richards, [7] Nessa, [8] and Levison, [9] have added eight cases. These with the present report make a total of thirty-eight. Of this group, fracture of the skull involving a frontal sinus was responsible for the pneumocephalus in twenty-three or sixty per cent. of the cases. The other causes were erosion of the walls of the ethmoid sinuses by chronic infection, erosion of the floor of the skull by a tumor, fracture thru the ethmoid sinuses, fracture thru the sphenoid sinus, fracture thru the mastoid, operation on the mastoid and brain abscess caused by gas forming bacilli.

The case here reported is one of the twenty-three in which fracture thru a frontal sinus was responsible for the pneumocephalus. All of these cases showed a striking similarity in the clinical picture and the pathological findings. The common symptoms were rhinorrhea, headache, mental confusion, dizziness, peculiar noises in the head, convulsions and hemiplegia. Papillo-edema occurred but was not particularly common. The X-ray generally

*From the Surgical Division, New York Neurological Institute, New York.

showed a pocket of air in the substance of the frontal lobe, air in the ventricles and occasionally air in the subarachnoid space as well. Dandy [1] considered that the sequence of events in the production of the pneumocephalus was as follows: The meninges and the cortex are ruptured at the time of the fracture and the injured cortex, pia and arachnoid become adherent to the dura. Then with periods of increased pressure within the sinus such as might be caused by sneezing, coughing, straining or even swallowing, air is forced into the substance of the brain and trapped by a valve-like communication between the dura and the fractured bone or a collapsible sinus tract in the soft brain tissue. With repeated periods of increased pressure the air pocket enlarges and finally ruptures into the ventricle. Of course there may be an additional communication with the subarachnoid space thru which the air has access to the ventricles or either condition may exist alone. Our case is quite typical of its group.

No. A 12122 H. Male. Age 42. Admitted to the New York Neurological Institute, September 18, 1926.

Two months before admission the patient was found unconscious after his car had crashed into a post. He was taken to a hospital where he was found to have an extensive comminuted fracture of the frontal bone. He was unconscious for three days, disoriented and confused for about four weeks, then improved and was discharged September 1st. At home his family considered that he was normal except that he was inclined to talk too much. September 8th, ten days before admission and fifty days after the injury, while walking from his bed to the toilet a large amount of clear watery fluid suddenly escaped from his nose, he became faint and suffered a severe headache. The rhinorrhea occurred repeatedly at irregular intervals, the headache persisted and the patient became progressively confused, disoriented and demented. He soiled and wet the bed regularly and had to be spoonfed. Most of the time he lay quietly in bed as if in a mild stupor but he was easily aroused and complained bitterly of headache. At

times his mind seemed to be clearer and occasionally he got out of bed and wandered aimlessly about the house

Examination on admission showed the following: He was sluggish, untidy and had the peculiar expression of a patient with marked mental disturbance. With this there was a shallow defensive facetiousness. For example when asked to show his teeth he did not comply but remarked, "My teeth are not as good as yours." He could be persuaded to carry out only the simplest orders after much urging and demonstration. He exhibited no initiative, asked no pertinent questions, volunteered no information. Left to himself he lay quiet and was completely indifferent to his surroundings. Attention, concentration and judgment were markedly impaired, he was disoriented for time and place and showed no insight insofar as his mental state was concerned. He walked with feet kept wide apart in a slow uncertain shuffle. Over the right frontal region of the head the scalp and bone were elevated about one centimeter to form a triangular plateau, one edge of which was five centimeters long, the other six. Percussion over this elevation gave a remarkably resonant hollow note. In the left fronto-parietal region there was a shallow stellate depression over which the percussion note was more resonant than normal. On the right side of the body the deep reflexes were slightly increased, the superficial reflexes diminished, the Babinski toe sign was present and muscle coördination and strength were slightly impaired. It was considered that these signs were due to the stellate depressed fracture over the left side rather than to a pneumatocele on the same side. The only neurological disturbances on the left were paresis of the lower facial musculature and a slight widening of the palpebral fissure. He could not recognize common odors The optic disc margins were hazy and the veins engorged The rest of the examination was negative.

The roentgenograms showed extensive stellate fractures of the frontal bone with one fissure thru the right frontal sinus and extending forward into the cribriform plate.

The coronal suture was involved and the right half of the frontal bone was separated at the bregma and slightly raised. There was a large pneumatocele in the right frontal lobe and air in the ventricular system. Over the left fronto-parietal region there was a shallow depressed stellate fracture.

The spinal fluid was dirty yellow in color, contained eighty-one cells per cubic millimeter, and one hundred and fifty milligrams of protein per hundred cubic centimeters of fluid. The other laboratory data were without significance.

September 27th, seventy days after the accident, the patient was operated on by Dr. Elsberg. Utilizing the old fracture lines and the elevated fragment of bone, a right frontal bone flap with its base placed anteriorly was turned down. The dura was found to be very tense and covered by a layer of organized blood clot about two millimeters thick. The right frontal lobe was then punctured and considerable air escaped; this reduced the tension of the dura. Next the cortex was exposed by wide incision of the dura and found to be soft and fluctuating. The needle was again inserted allowing more fluid and air to escape. The bulging right frontal pole was carefully separated from the dura; toward the mesial side there were some fine adhesions and after these had been divided considerable clear yellow fluid ran out. The surface of the frontal lobe now became concave so that little retraction was needed to bring the orbital plate into plain view. Other adhesions were separated and just behind the frontal sinus a small perforation of the dura was found. It was about two millimeters in diameter and rimmed with a brownish discoloration about one millimeter wide. A probe passed thru this hole came upon irregular bone, undoubtedly the fracture line in the posterior wall of the sinus. A piece of temporal muscle was placed over the perforation and a second piece over the opening toward the mesial surface thru which clear yellow fluid had flowed. The cavity left between the dura and the brain by

the brain's collapse was filled with normal salt solution and the dura closed by a continuous silk suture. Along the edges of the old fracture line the bone was trimmed so the edges approximated and thus the old deforming elevation was removed. The scalp incision was closed by a galea and skin sutures of fine silk. A twenty-four hour drain was passed down to the dura at one spot because of some venous oozing.

The postoperative course was rather stormy. The temperature remained above normal for eight days, ranging from 101.6° to 102.4° Fahrenheit. For five days the patient's neck was stiff and there was a suggestion of a Kernig sign. On the third day about half an ounce of blood-stained fluid was discharged from the right nostril, this recurred from time to time until the eleventh day when it ceased permanently.

By the thirteenth day there was a very definite change in his mental status. He was oriented, had insight, fed himself and controlled his excretions. On the sixteenth day after operation X-ray examination showed no evidence of pneumocephalus; there was no mental abnormality, the pyramidal signs on the right side had disappeared except for slight diminution of the abdominal reflexes and absence of normal plantar flexion. Strength, coördination and gait were normal; odors were recognized; the optic discs were slightly pale but the veins were of normal size. The left facial paresis was gone; the inequality of the palpebral fissures remained; there was no visible bone deformity in the frontal bone. The percussion note over the flap had the customary resonance of a flap but nothing of the hollow drumlike quality present during pneumocephalus. Over the rest of the skull the note was a normal flat and high pitched one.

Three months after operation complete examination showed only very slight pyramidal signs and slight disturbance of tactile discrimination in the right lower extremity. X-ray showed no evidence of air within the

cranium. There were no subjective symptoms whatsoever. The patient had been working regularly for two months.

Twenty-seven months after operation in answer to a follow-up letter he wrote, "I am feeling fine; nothing bothers me whatever."

In his article Dandy [1] says: "It hardly seems possible to make an absolute diagnosis of pneumocephalus from any combination of signs and symptoms except one, sneezing followed by cerebrospinal rhinorrhea." Teachenor [10] contends that the roentgenogram is the only method of diagnosis. In this case a positive diagnosis was made long before the roentgenograms were taken and the deciding factor in establishing the diagnosis was an easily elicited physical sign, namely, the extraordinary resonant percussion note of the skull. Jean and Villechaise [5] also noted this sign in their case. In every instance of pneumocephalus careful examination of the skull by percussion should reveal a characteristic change of the percussion note over the region of the brain in which there is a large collection of air.

Of the thirty-eight cases twenty were operated on and six died, thirty per cent. fatality. Of the eighteen cases not operated on seven died, thirty-nine per cent. fatality, and several authors concluded that surgery was not advisable for it appeared that the patient had an equally good chance of recovery without it. However, on reviewing the operations in cases where the entrance of air was due to a frontal sinus fracture, it was found that in only seven cases was a definite attempt made to shut off the communication between the air pocket and the sinus. Of these seven, only one died, fourteen per cent., and the rest recovered promptly with minimum residual symptoms Certainly in this type of case where the point of entrance of the air is so easily accessible, and where there is presumption or proof that the air pocket is enlarging or stationary, any intelligent attempt to block the passage is justified.

SUMMARY

1. The report of a case of pneumocephalus is added to the thirty-seven already recorded in the literature.

2. A change in the percussion note of the skull is suggested as a diagnostic sign of this condition.

3. An attempt to correct the condition by operative procedure is justified in selected cases.

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Section of Medicine, March 20, 1928

MEDICAL PROBLEMS IN THE DIAGNOSIS AND TREATMENT OF CANCER

LLOYD F. CRAVER

The treatment of cancer, before the advent of radiation, was generally regarded as an exclusively surgical problem. The inoperable case was condemned to unsatisfactory makeshift medical treatment, or was sent to an institution for incurable disease. Modern radiation methods, however, have not only brought about a great change in the prognosis of many forms of cancer, but also, because of their attractiveness to the patient, have made possible the collection in hospitals of large numbers of cases in all stages of the disease.

The field has thus become so broad that it includes, in addition to cases suitable for operation, many in which a great deal of additional treatment, medical and radiological, is required; other varieties, such as lymphosarcoma, in which operation is contra-indicated, but in which prolonged careful medical supervision and judicious radiation can accomplish a great deal; others in which the differential diagnosis from certain medical conditions calls for a high degree of familiarity with those medical conditions; and still others in which at present the difficulties of early diagnosis and the inadequacies of our methods of treatment make it appear that one of the most useful functions the student of cancer can perform is to attempt to learn more of the causes of the disease in hopes of pointing to some means of prevention.

In an institution where all varieties of tumors are treated there are many points of contact with internal medicine. Most of the ordinary medical conditions occur and have to be treated, either in preparing the patient to withstand operative or radiation procedures, or as complications accompanying or following such procedures. For example, diabetes, hypertension and cardiorenal diseases are frequently encountered in cancer patients, many

of whom are well along in adult life and also present tumors which in themselves offer difficulties enough in treatment.

Tuberculosis comes into relation with the cancer problem in many aspects. The existence of pulmonary or some other type of tuberculosis in a cancer patient makes more difficult the treatment and proper after-care. Radiation of a tumor located in or on the chest of a patient with pulmonary tuberculosis involves exposure of the lung and consequent danger of aggravating the lung condition.

Tuberculous laryngitis, tuberculous nodes involving the wall of the esophagus and tuberculous ulcers of the mouth may simulate cancer. Pulmonary tuberculosis has to be distinguished at times from primary and secondary tumors of the lung.

The association between Hodgkin's disease and tuberculosis has long been apparent clinically, and since the work of Dr. L'Esperance, reported before the Academy recently, it would appear that certain cases, at least, of Hodgkin's disease may be due to the avian form of the tubercle bacillus.

Experience in recent years in the radiation of tuberculous nodes has shown that they may react in one of three ways: Small doses may cause inflammatory reaction with sinus formation; in other cases regression without marked inflammatory reaction results, and in some cases even heavy doses will produce no change. The last result has been seen now in several instances in which at operation caseous nodes have been removed.

Lung Metastases. The marked variations in the symptoms and signs produced within the chest by tumors, and their frequent simulation of various acute and chronic inflammatory processes, afford a most profitable study. A complete knowledge of all the manifestations of malignant diseases of the lungs would be practically equivalent to a complete knowledge of all lung lesions of whatsoever type. There is a too general tendency to rely entirely

upon the X-ray film for the early detection of metastases to the lungs and pleura. It is undoubtedly true that in many cases the X-ray film will reveal tumors in the chest when no definite physical signs can be elicited. There are, however, unquestionably some cases in which the physical signs may be present before a diagnosis can be made from the X-ray film. This is especially true in those tumors which are disseminated chiefly through the lymphatics, such as cancer of the breast.

The most constant early physical sign of metastasis to the lung is a localized decrease or absence of breath sounds. This may be the only sign.

The possibility should always be kept in mind that any patient with acute pulmonary symptoms may be suffering from a primary or secondary malignant tumor of the lung. There are numerous reports in the literature, but little is said in text books about the mistaking of malignant lung tumors for bronchitis, pleurisy, pneumonia and even empyema.

Aneurysm appears to be more frequently mistaken for tumor than *vice versa*. In selected doubtful cases the therapeutic test with radiation will probably do an aneurysm no harm, and if the tumor is of a radiosensitive type, such as most frequently occurs in the mediastinum, it will soon produce a sufficient regression to settle the diagnosis.

Pendular or tic-tac rhythm of the heart has been noted repeatedly, associated with thymomas. In other cases of thymoma or mediastinal tumor, tachycardias of varying degree are seen, some with remarkably constant rates from day to day.

The diagnosis and treatment of the whole group of diseases termed by many the lymphoblastomata is properly a medical problem. In the treatment of myelogenous leukemia ambulatory treatment with five to seven daily fractions of low-voltage X-ray limited to the splenic area

seems to have given just as prompt and satisfactory results as the use of the single application of the radium pack to the spleen, or the radiation of the long bones in addition to the spleen. The level of the basal metabolism would not be regarded as a safe guide in the treatment of leukemia.

Sternal tenderness in myelogenous leukemia is a most striking phenomenon in a large percentage of cases. In a rough way the degree of tenderness and the size of the area of tenderness usually correspond with the degree of illness of the patient. When the area is small it is nearly always located at one definite spot, the midline of the sternum at the level of the fifth costal cartilage.

When a tumor by pain or mechanical interference with the alimentary tract has prevented the patient from taking his customary diet, inordinate loss of weight may occur, and it then becomes of prime importance so to modify the diet that the patient can with comparative comfort obtain sufficient intake in terms of total calories and proteins.

Experimentation with the various so-called constitutional agents, colloidal metals, etc., is a problem for the internist. In every case treated with lead some degree of toxicity has to be combated, and careful prolonged medical supervision is an essential.

Considering the enlarged scope of the cancer problem, the medical man should find therein a large field for his activities.

PHASES OF THE PATHOLOGY, DIAGNOSIS AND TREATMENT OF CARCINOMA OF THE PROSTATE*

BENJAMIN S. BARRINGER

Most prostatic carcinomas have origin in the posterior lobe. This lobe, were it not for this fact, would remain insignificant, and almost unknown. It does not hypertrophy as do the other prostatic lobes. It lies between the prostatic urethra and the rectum, and this position makes it the most accessible of all the lobes of the prostate to palpation by a finger introduced into the rectum. It is perhaps one-half a cm. in thickness, and lies between two strong constricting fascae.

When a cancer starts in this lobe there is no open space in which the cancer may grow, and growth takes place in a course directed by these fascae. That course is almost never outward toward the perineum, but upwards further into the body cavity, along the posterior pelvic chain of lymphatics, and therefore still more inaccessible.

These constricting fascae are often stretched by the growth, but while the fascia on the bladder side is frequently penetrated by the cancer that on the rectal side almost never. So we have the phenomenon of a semi-internal cancer beginning in a semi-inaccessible place, with little or no symptoms, growing in a position where it cannot be seen, but where it can be felt, early growing beyond the prostate, and becoming still more difficult to reach. In 98 per cent. of our cases, when first seen at the Memorial Hospital, the cancer had grown beyond the prostate.

These are briefly the factors which make the diagnosis and treatment of prostatic cancers difficult. Until recently,[1] specimens for pathological examination were only obtained after a surgical operation for the removal of the

*From the Urological Service, Memorial Hospital, New York.

[1] We have developed at Memorial Hospital a specimen-taking needle which may be inserted through the perineum into the prostate, and guided by a finger in the rectum. We have been able to get a specimen for examination in two out of three cases.

cancerous prostate. So we have but slowly come to recognize the great variations in the degree of malignancy of different prostatic cancers, and therefore variations in their growth rate.

It is probable that the most malignant types invade the lymphatics early, and spread rapidly through the lymphatic chains. I have seen one such case with a prostatic cancer so small as to be barely recognizable, yet with extensive lymphatic involvement, and with a large cancerous signal node, many times larger than the primary cancer, in the left supra-clavicular space. At the other end of the chain is the prostate of low grade malignancy. We have autopsied a patient with a very large prostatic cancer, almost filling the pelvis, yet with no lymphatic invasion beyond.

The most malignant cancers classified according to Broders and corresponding to Dr. Ewing's grade 3 are, because of their cellular and undifferentiated structure, what is called "radio-sensitive." That is, they are much more affected by radiation than the less malignant sclerotic types, and therefore more susceptible to control. These, the radio-sensitive group, comprise perhaps but five or ten per cent. of all prostatic cancers.

We believe it is of a great deal of importance to identify these various grades of malignancy for this reason: If a prostatic cancer is highly malignant, and is sufficiently limited in its extent so that there would seem to be a hope of controlling the cancer, then operation is the last thing to be thought of, and radiation the first.

The trauma caused by an attempt to remove a cancerous prostate, either by the perineal or supra-pubic route, cannot but help as far as I can visualize, to squeeze cancer cells into lymphatics and so spread the disease. We have seen not a few patients who had been subjected to a supra-pubic prostatectomy in whom the cancer subsequently grew through the supra-pubic wound.

A prostatic cancer, unless interfered with by operation, rarely grows in this direction. This operative hazard applies not only to the most malignant group, but to all prostatic cancers. Radiation should be employed before any contemplated operation to devitalize the cancer cells.

We have intimated that specimens for pathological examination are difficult to get from a prostate, so we make the diagnosis of radio-sensitivity by reversing the procedure. The patient gets X-ray treatment first, and the diagnosis of radio-sensitivity is made by observing the effect upon the prostate. Deep X-ray treatment should be reinforced by radium needles, inserted through the perineum into the prostate.

This applies naturally to those prostatic carcinoma, which from our examination we believe are small enough to control.

In our first series of 42 cases we controlled 5 or 10 per cent. for more than 5 years, and these 5 presented no signs or symptoms of cancer. In the next series we did not do as well. Now we are swinging back to our 10 per cent. by better methods of diagnosis and treatment.

This radio-sensitivity of prostatic cancers is the reason why we can prolong life in some extensive cancers, which, when first seen, are far beyond control. I have recently seen two cases of this group. One had metastases in nearly every bone of his body. In both patients radiation caused marked changes in the primary and metastatic tumors, and prolonged the patients' lives, as far as I could judge, one and three years respectively.

From the standpoint of diagnosis of prostatic cancer, we have come across one point of interest. We know that of all prostatic hypertrophies, perhaps 20 per cent. are cancerous—that the differential diagnosis between single hypertrophy and cancer is often difficult, and more often not made before operation.

We have in the course of a piece of research on the effect of deep X-ray therapy on hypertrophied prostates, made

the diagnosis in three different cases of what seemed to be simple prostatic hypertrophy. A few weeks after a course of deep X-ray, this diagnosis was changed to that of cancer. The prostate which formerly felt soft and regular had changed to one hard and irregular. The only way we could explain this was that a certain amount of edema had masked the underlying cancer, and the X-ray treatment had removed this edema. We believe that if this is a constant result, it may prove of considerable value in making this differential diagnosis.

While we do not entirely agree with the opinion expressed by a well-known surgeon that "Whatever one does for a patient with a prostatic cancer, one does the wrong thing," we do believe that this, in a way, voices the difficulties of treatment. Suffice it to say that at present—as far as our own experience goes—the following not too rigid rules should be applied:

(1) An attempt to control the prostatic cancer should be made in those cases in which we believe the cancer has not grown far beyond the prostate, and which show no bone metastases. Complete operative removal of a cancerous prostate does not seem feasible or possible. When this is attempted, portions of the cancer are invariably left behind. We have verified this many times by the examination of the pathological specimen removed and by the examination of the patient at various times after the operation. So, if operation is done, radiation of the prostatic and supra-prostatic areas is imperative. To my mind, radiation to control the cancer is superior to operation.

(2) The problem of the control of the cancer and the urinary obstruction are two different ones, and should be dealt with separately—the one by radiation, the other by minor operation.

(3) Extensive major operation should, as far as possible be avoided, if we can have a substitution therapy as efficient as operation. The reason for this is that we can give no assurance of cure by any method; that if we fail to cure we have deprived the patient of from 2 to 6 months

of his short remaining span of life, granting that it takes from 2 to 6 months to recover from this major operation. We know that the large majority of patients will not live for 2 years after first seen. In 102 consecutive cases seen at the Memorial Hospital, but 15 lived over 3 years, 6 over 4 years, 5 over 5 years, and 3 over 7 years.

(4) In the control of symptoms, sciatic and various other nerve pains, and pressure edema of the legs, radiation may accomplish much, or may fail.

This ends my very brief summary of treatment. We are at present only at the threshold of knowledge, both as to the cause and the control of prostatic cancer. We must insist upon regular examinations of the prostate in all persons over the age of 60. Such examination should be a part of the periodic examination of the heart, blood vessels, kidneys, etc. We must, above all, keep our minds open to new suggestions, new leads, change one thing here, and try another there. We should always be reluctant to place patients in the hopeless class. I vividly remember a patient who came to the Memorial Hospital so labelled. He had a large extensive carcinoma of his prostate, but his only symptom was severe pain in his left hip. A moderate amount of radiation entirely relieved this pain. He has remained quite well for three years, and today at the age of 80 still enjoys life.

If we progress, the seemingly hopeless case of to-day may become the promising one of tomorrow.

Section of Obstetrics and Gynecology, March 27, 1928

INFLUENCE OF SUPPLEMENTARY FEEDING OF CARBOHYDRATE ON LACTATION

JOHN E. TRITSCH

The investigation was conducted for the purpose of determining whether supplementary feeding of considerable amounts of carbohydrates or of different kinds of carbohydrates, would influence:

1. The quantity of milk secreted by the mother
2. The composition of the milk, or
3. The growth of the growing infant.

Four series of normal lactating mothers were observed at Flower Hospital. The first three were conducted practically simultaneously, in order to have the same seasonal influences in all. The fourth group was begun somewhat later than the others. The only difference in the four groups was the supplementary feeding of carbohydrate or fat.

Group 1 received the regular hospital ward diet, in other words was the control group.

Group 2 received the same diet as group 1, excepting that the noon-day dessert was omitted and 60 grams (uncooked weight) of rice was added daily. The rice was used for preparing a noon-day dessert and for cereals, beverages, soups, etc.

Group 3 was similar to group 2, with tapioca replacing rice.

Group 4 was a further control in which the carbohydrate additions of groups 2 and 3 were replaced by the equivalent in calories of a high fat food, namely cream.

The hospital diet had a caloric value of about 2600, each of the others having about 3000 calories.

The special diet carefully weighed in the kitchen, began about 24 hours after delivery. This was under the supervision of a graduate nurse, who recorded observations concerning diet and lactation, weighed the infants at the same hour each day, and also on the 7th day postpartum, determined the intake of the infant by weighing before and after nursing. On the 5th and 9th days, at the same hour of the day, one breast was completely emptied by an electric breast pump and the milk thus obtained measured and analyzed.

The subjects, when discharged on about the 11th day, were requested to continue their dietary regime at home and to report at the clinic every two weeks up to the 6th week. At these visits the baby was weighed and at the 4th and 6th week visits the breasts were pumped for milk analyses. Naturally, this post hospital period is of little experimental value because of the lack of uniformity of diet, etc.

The number of cases was as follows: Group 1—17, Group 2—36, Group 3—40, Group 4—34; Total 127.

Gain in Weight of Infant

There was no significant difference in the average daily gain in weight of the infant from the 5th day until discharge. The average of all 127 cases was 1.00 ounce a day. As the lowest group average was 0.90 ounce and the highest 1.09 ounces, no definite conclusion can be reached.

Percentage of Infants Regaining Birth Weight at the Hospital

Even though the average gains of the infants show no important variations, the proportion of infants gaining their birth weight by about the 11th day does show wide variations. The cream group regained their birth weight in the greatest proportion (55.9 per cent.) the rice and tapioca groups next (47.2 and 40.0 per cent. respectively) and the control in only 29.4 per cent. Too much stress

should not be placed on these differences, because, even in a study of 127 cases the fluctuations of a few cases in either direction will change the percentage figures appreciably.

Average Intake of Infant

The tapioca and rice groups consumed an average of 2.47 and 2.40 ounces respectively, the cream group 2.01 and the control 1.84 ounces.

Average Volume of Milk Obtained by the Breast Pump

In conformity with the results on the intake just mentioned the average volume secreted as determined by measuring the milk obtained by the electric breast pump, was greatest in the two carbohydrate groups. The averages for the 5th and 9th days were 70.0 c.c. and 69.5 c.c. for the rice and tapioca groups respectively. However, here the controls without supplementary feeding were next (65.5) and the cream group last (57 c.c.).

Differences in the Composition of Milk

This is the largest series of human milk analyses ever made under standardized conditions of diet, etc. It was found that the changes of diet did not influence the protein content to any appreciable extent. The cream diet was the only one to increase the fat content on the 5th day but by the 9th day all groups had about the same percentage of fat. As regards lactose, the cream diet and the tapioca diet both increased the sugar on the 5th day, and on the 9th day the rice group also had a high lactose content in the milk.

Although the milk of the cream group was made "richer," the smaller volume led to a low caloric content per specimen obtained, as shown by the following figures.

CALORIES IN AVERAGE SPECIMEN OBTAINED

1	2	3	4
Hospital diet	Rice group	Tapioca group	Cream group
44.0	45.6	44.2	38.4

Averages of 5th and 9th days.

PARITY AND AGE OF MOTHER

Considering this subject from the standpoint of age and parity in all groups, it is interesting to note that the younger mothers (16-20 years of age) secreted larger quantities of milk and their infants gained weight more rapidly than those in any other five year period group. That this was not due to a greater proportion of primiparae is indicated by the fact that on considering the subject by parity, the para-three patients secreted a larger amount of milk and their infants gained more weight per day than those of any other parity.

RADIATION THERAPY IN GYNECOLOGY

IRA I. KAPLAN

The method of Radiation Therapy as employed at Bellevue Hospital, New York City, in the treatment of gynecological conditions is described. Statistics showing the number of cases treated and specific details of typical cases are given.

Both benign and malignant conditions are treated and the details of the therapy used is described.

The modalities employed are x-rays, radium and high frequency currents in the form of diathermy and surgical endothermy. The indications for the employment of these are described. The type and form of therapy chosen for any case depend on various factors; whether the treatment is palliative or curative; whether or not the lesion is localized and readily accessible, or widely disseminated, and on the general condition of the patient.

The type of treatment varies also with the requirements of the case, whether the desire is for stimulation of a hypofunction, or inhibition of a hyperfunction, or to destroy a new growth, or for symptomatic relief.

As a general rule x-rays are used in cases with large, disseminated, deep-seated lesions and radium in locally accessible areas. Surgical endothermy is used for removing excessiva local lesions and as an aid to radium therapy in the treatment of malignancy of the cervix. Medical diathermy in the treatment of pelvic infections has given good results.

The presence of infection, the size of the tumor or the extent of the lesion does not necessarily act as a contraindication to radiation therapy.

In benign conditions radiation is offered as an alternate method of procedure in place of surgery, and as a new method of procedure in the treatment of functional disturbances.

In malignancy it is the method of choice either used alone, or in conjunction with surgery. In malignancy of the cervix it is the only method used in our service.

Biopsy is done in all cases of malignancy, but as yet no firm conclusion as to the effect of histological characteristics on the choice of radiation is definitely established. The most frequent histological type is plexiform epithelioma.

Detailed statistics of the therapy of functional conditions, of fibroids and of malignancy of the cervix are given.

Radiation is not offered as a panacea, but does offer a tried method for aiding the gynecologist in his efforts to treat efficiently some conditions otherwise not readily controllable.

The radiation therapist works in coöperation with the gynecologist in the treatment of all cases.

DIAGNOSIS AND PREVENTION OF CARCINOMA OF THE CERVIX

FRANK A. PEMBERTON and GEORGE VAN S. SMITH

Endocervicitis and erosion of the cervix are commonly found before the development of cancer and are usually present for years before cancer appears. They probably function as an etiological factor by keeping the epithelium covering the cervix and its canal in a state of unrest. The early differential diagnosis between inflammatory and repair processes and carcinoma depends on the change in the basal layer of the epithelium.

Carcinoma rarely develops after the above conditions are relieved. All inflammations and erosions of the cervix should be considered as possible precursors of cancer. Therefore they should be watched anyway and treated if severe or if the patient is in the carcinoma age. The treatment may be by cautery, amputation, radium or repair.

PROCEEDINGS OF ACADEMY MEETINGS, MARCH

Stated Meetings

Thursday Evening, March 1, at 8:30 o'clock

I. Executive Session
Election of Fellows

II. Paper of the Evening
Concerning certain ocular interpretations of cardio-vascular, renal, metabolic and intracranial disorders; an illustrated lecture, George E. de Schweinitz, Professor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania, Philadelphia

A collation (Loomis Entertainment Fund) will be served after adjournment, to which the Fellows and guests are invited.

Thursday Evening, March 15, at 8:30 o'clock

I. Executive Session

II. Papers of the Evening

a. The present status of physical therapy, Frank B. Granger, Physisician in Chief for Physical Therapy, Boston City Hospital (by invitation)

b. Experimental inoculation of chickens with Hodgkin's nodes, Elise L'Esperance
Discussion, James Ewing

Section Meetings

Section of Surgery

Friday Evening, March 2, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Presentation of Cases

a. 1. Epithelioma of the superior maxilla, resection
2. Epithelioma of vulva, radical operation with bilateral inguinal node dissection
3. Gunshot wound of spleen, splenectomy with the aid of osteoplastic resection of costal arch, H. Willy Meyer

b. 1. Exophthalmic goitre four years and eight months post-operative
2. Tetany following lobectomy for adenomatous goitre
3. Exophthalmic goitre in a nine year old child, J. William Hinton

c. Patient with massive collapse of lung demonstrating etiology and effective method of treatment, Charles L. Gibson

III. Paper of the Evening
Clinical history of goitre, Dean Lewis, Baltimore (by invitation)

IV. Discussion by
Nellis B. Foster, Emil Goetsch

Section of Dermatology and Syphilis

Tuesday Evening, March 6, at 8:30 o'clock

ORDER

I. Presentation of Patients

a. Cases from the Post Graduate Medical School and Hospital, George M. MacKee, Fred Wise, I. Rosen, David Satenstein, Max Scheer, E. W. Abramowitz, Van Alstyne Cornell, Joseph Jordan Eller

b. Miscellaneous cases

II. Discussion

III. Executive Session

Note: Examination of cases is limited to members and their invited guests

Section of Pediatrics

Thursday Evening, March 8, at 8:30 o'clock

(promptly)

ORDER

I. Papers of the Evening

a. The sex factor in infant mortality, Harry Bakwin
Discussion, Alfred F. Hess

b. Congenital intestinal obstruction, Richard W. Bolling
Discussion, Henry W. Cave, John M. Hanford

c. A possible causal factor in food allergy of infants, Bret Ratner
Discussion, Arthur F. Coca, Oscar M. Schloss

Attention: Tri-City Meeting—Philadelphia, Saturday, October 13, 1928

Section of Otology

Friday Evening, March 9, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Presentation of Case

Demonstration of a new method of determining unilateral deafness and malingering, John Guttman

III. Papers of the Evening

a. Primary jugular bulb thrombosis with a report of nine cases, Jacob L. Maybaum, Irving Goldman (by invitation)
Discussion by Reuben Ottenberg

b. Tuberculosis of the middle ear

1. From the clinical standpoint, Gerard H. Cox (by invitation)
2. From the pathologist's standpoint, James G. Dwyer

IV. General Discussion

V. Executive Session

Section of Historical and Cultural Medicine

Friday Evening, March 9, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Paper of the Evening

The origin and antiquity of man in America, Ales Hrdlicka, Curator, Division of Physical Anthropology, U. S. National Museum, Smithsonian Institution, Washington, D. C. (by invitation)

III. Discussion by

Bruno Oetteking, Curator of Physical Anthropology, and F. W. Hodge, Archaeologist, Museum of the American Indian, Nels C. Nelson, Associate Curator of Archaeology, and Barnum Brown, Curator of Fossil Reptiles, American Museum of Natural History (all by invitation)

Section of Neurology and Psychiatry

Tuesday Evening, March 13, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Clinical Presentation

A case for diagnosis—multiple sclerosis or syphilis of the nervous system, Irving Pardee

III. Case Report

A case of Torula meningitis, S. Bernard Wortis (by invitation), Henry Wightman (by invitation)

IV. Papers of the Evening

a. The syndrome of diabetes insipidus, exophthalmos and disease of the membranous bones, Louis Hausman, Walter Bromberg (by invitation)
Discussion, B. Sachs, Walter M. Kraus

b. Traumatic pneumocephalus, operation and recovery, Theophilus P. Allen (by invitation)
Discussion, Charles A. Elsberg

V. Executive Session

Section of Orthopedic Surgery

Friday Evening, March 16, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Paper of the Evening

The treatment of paralytic deformities of the foot. Demonstration of illustrative cases (30 min.), Leo Mayer

III. Discussion or Presentation of Relevant Cases (10 min. each), opened by Royal Whitman, Fred H. Albee, W. Russell MacAusland, Herman Von Lackum, Joseph B. L'Episcopo

IV. General Discussion

Section of Ophthalmology

Monday Evening, March 19, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Clinical Cases

a. Report of a case of bilateral sarcoma of the uveal tract, Francis W. Shine

b. Cases of squint operated by a new method of recession without tenotomy, Sigmund A. Agatston

c. Cases of cataract extraction after Barraquer's operation, William McLean (by invitation)

III. Microscopal Preparations

a. Some interesting pathological pictures in the eye, Louise H. Meeker (by invitation)

b. Pathology of the crystalline lens, Melvin G. Herzfeld (by invitation)

IV. Moving Picture Demonstration of Barraquer's Method of Cataract Extraction, William McLean (by invitation)

V. Executive Session

Section of Medicine

Tuesday Evening, March 20, at 8:30 o'clock

ORDER

I. Papers of the Evening

a. New demands in the laboratory diagnosis of tumors, James Ewing

b. Medical problems in the diagnosis and treatment of cancer, Lloyd F. Craver

c. Some unusual manifestations of mammary carcinoma, Burton J. Lee

d. Some phases of the diagnosis and treatment of carcinoma of the prostate, Benjamin S. Barringer

II. Discussion, Francis Carter Wood

Section of Genito-Urinary Surgery

Wednesday Evening, March 21, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Presentation of New Instruments

a. Cystoscopic lithotrite, Julius J. Valentine

b. 1. A new cystoscope
2. A new cystoscopic lithotrite, Abraham Ravich (by invitation)

III. Report of Cases
Dermoid cyst of the kidney, Julius J. Valentine

IV. Paper of the Evening by
William Lower, Cleveland (by invitation)

V. General Discussion

Section of Obstetrics and Gynecology

Tuesday Evening, March 27, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Papers of the Evening

a. Influence of supplementary feeding of carbohydrate on lactation, John E. Tritsch (by invitation)
Discussion opened by Dever S. Byard, Israel S. Kleiner, Ph.D. (by invitation)

b. Radiation therapy in gynecology, Ira I. Kaplan

c. The diagnosis and prevention of cancer of the cervix, Frank A. Pemberton, Boston (by invitation)

III. Discussion by William P. Healy, Frederick C. Holden, Max Cutler (by invitation), Douglas Symmers

IV. General Discussion

V. Executive Session

Section of Laryngology and Rhinology

Wednesday Evening, March 28, at 8:30 o'clock

Clinical Evening

ORDER

I. Reading of the Minutes

II. Presentation of Cases by the Manhattan Eye, Ear and Throat Hospital
From the Clinics of E. Ross Faulkner, John E. Mackenty, Samuel McCullagh, Harmon Smith

ORGANIZING CONVALESCENT CARE

Report of Progress

BY

The Advisory Committee on Convalescence of The Hospital Information and Service Bureau

After making a comprehensive study of the facilities for convalescent care in New York City in 1924, the Committee on Public Health Relations of The New York Academy of Medicine appointed four subcommittees, on each for Medicine, Surgery, Neurology and Pediatrics. These committees were assigned the task of formulating the standards for convalescent care in their respective fields. Their recommendations were approved by the Committee on Public Health Relations, published in the Hospital Social Service Magazine in July, 1925 and later reprinted in several other magazines.

The entire matter was then referred to The Hospital Information and Service Bureau of the United Hospital Fund as the organization best qualified to continue the work. Dr. George David Stewart, as Chairman of the Executive Committee of the Hospital Information and Service Bureau, appointed a committee of representatives of various homes and social agencies interested in convalescence, with a member of the Public Health Relations Committee of the Academy as its Chairman, to serve as an Advisory Committee on Convalescence. Later the Advisory Committee was elected as the Executive Committee of the Section on Convalescence of the Welfare Council. The Committee is at present serving in this dual capacity.

Organizing Convalescent Care

From the very beginning of the study, it was evident that there was not sufficient factual information available in regard to Convalescent Homes to warrant the formulation of any definite constructive program with regard to the problem. The committee therefore initiated a series of studies dealing with the varied phases of the situation.

Thus considerable material of interest and importance has been gathered and in this report, I shall briefly outline the main results of these studies, reserving for a future report other matters which are still occupying the attention of the committee, and for which up to the present time no immediate solution has been found.

In planning the studies the committee had in mind three purposes: To bring about a more complete utilization of existing facilities, to raise the standards of the Convalescent Homes, and to eliminate wasted or misdirected effort.

1. *Directory of Convalescent Homes*

The first activity of the committee was the revision and enlargement of a preexisting directory of the agencies which maintain convalescent facilities. Such a revision was published in 1926 and a second edition in 1927.

2. *Central Information Bureau*

The committee received reports to the effect that there was a general lack of provision for certain types of convalescents, and that hospital social workers were frequently unable to place patients in certain Homes. These reports gave the impression that all the existing institutions were full to capacity most of the time and that a large waiting list of applicants was the rule. A study of the situation revealed, however, that overcrowding is merely seasonal, occurring especially in the summer time and that there are frequently vacancies in some Homes while others are filled. Believing that some relief for this condition might be afforded by the establishment of a central information bureau where a census of available facilities could be kept and to which anyone desiring to place a patient in a Home could apply and learn where a patient might with certainty be placed at a given time, the committee has established such a service. Several Homes are now coöperating with the Bureau and telephone regularly to report vacancies. In 1926, 171 requests for information and placement of cases in Homes were received

and in 1927, 470 such requests were answered. As this service is becoming more widely known, it is being more extensively used and its value is being generally recognized.

The Bureau is not intended to supplant the present existing admission offices of the Homes, but simply to serve as a source of information with regard to available facilities at all times.

There are, however, many Homes which do not maintain admission offices in the city, due in most instances to the additional expense involved, and the Bureau has been requested to act in that capacity for some of them. At present the Bureau is furnishing this service to seven Homes.

3. *Record of Utilization of Convalescent Homes*

The committee has been keeping a record of the annual utilization of the Convalescent Homes and annually prepares tables showing the percentage of utilization of the facilities in various types of Homes. This information is published as an appendix to this report. In considering the percentage of annual utilization, it should be borne in mind that an average utilization of 90 per cent. connotes full utilization, in view of seasonal variation in illness and in view of the fact that time must be allowed for renovations and the like.

4. *Negro Convalescence*

At the request of the Urban League, an organization interested in the negro, the committee took under consideration the problem of negro convalescence. Those in charge of convalescent homes are rather unanimously of the opinion that the presence of negroes among the patients is a disturbing factor and is detrimental to the peace of mind of the white inmates, thus interfering with one of the most important factors in convalescent treatment. This feeling is so prevalent that the majority of Homes are loath to receive even a small number of negroes, and many bar them

entirely. In consequence, there is a lack of facilities for the convalescent care of the negro, and the committee has called attention to the need of establishing an institution for this purpose, either as a separate Home or as a separate unit in an already existing institution.

5. *Convalescence of Neuropsychiatric Patients*

A study of facilities for the care of the convalescing neurological or psychiatric patient likewise brought out a great need of suitable provision for this type of patient. It was ascertained that only forty beds were available when 700 were needed. The findings of the subcommittee which undertook a critical study of this field were published in pamphlet form by the Sturgis Research Fund.

6. *Chorea*

A report has been made on the value of convalescent care for choreic patients, based on a study of facilities and the results of convalescent care.

7. *Fire Hazard*

A rather serious fire, which occurred in one of the Homes, was responsible for a survey to determine the extent of existing fire hazards. In many of the Homes the precautions against fire were inadequate and below the standards of safety. The committee bent its energies toward urging the Homes to remedy this defect, and a salutary effect has been reported in most if not in all instances.

8. *Standardized Admission Card*

At the present time many of the Homes have their own peculiar methods of admission and of recording information concerning the prospective inmate. All require admission cards to be filled out by those desiring to place the patient in the Home, but the cards vary in size, shape, color and spaces in which to insert the desired information. This makes it necessary for anyone having to place a large number of patients in different Homes to have on hand a considerable collection of cards of varying shapes,

and if the patient fails to be admitted to one Home, another card must be made out for another institution.

To remedy this condition, the committee has prepared a uniform admission card embodying the essential data for all the Homes. Fifteen Homes are now using these cards and others will undoubtedly follow.

The committee has been functioning for only two years and the problem which has been entrusted to it is of such magnitude that it has been possible but to scratch the surface of things.

The activities outlined in this report have been fundamental and the results to date may be regarded as progress in the right direction.

ADRIAN V. S. LAMBERT,
Chairman.

Utilization of Convalescent Homes for One Year

From October 1926 to October 1927

Summary Table

Bed Capacity and Days Care

Name of Home	Total Bed Capacity	Days Care in a Year		Per Cent. of Utilization
		Maximum Days Care	Actual Days Care	
General Homes ♯ Adults	276 W. 264 S.	90,930	69,300	66%
General Homes ♯ Children	846 W. 946 S.	258,889	227,415	88%
Special Homes Mothers and Children	117	42,705	30,429	71%
Special Homes Children, Cardiac	171	62,837	55,295	92%
Special Homes Children, Orthop.	129 W. 152 S.	36,417	29,791	80%
Total	1373 W. 1650 S.	431,188	359,156	83%

Utilization of the Convalescent Homes for One Year

From October 1926 to October 1927

General Convalescent Homes—Adults

Name of Home	Total Bed Capacity	Days Care in a Year: Maximum Days Care	Days Care in a Year: Actual Days Care	Per Cent. of Utilization
1. Isabella Home	28	10,220	8,213	80%
2. Margaret and Sarah Switzer Foundation *Sunnyside Farm	52	11,024	3,388	31%
3. ‡Neustadter Home	58	21,170	14,885	70%
4. St. Andrew's	30 W. 18 S.	9,096	4,625	51%
5. ‡Solomon and Betty Loeb Memorial Home	108	39,420	38,189	97%

General Convalescent Homes—Children

Name of Home	Bed Capacity	Days Care in a Year: Maximum Days Care	Days Care in a Year: Actual Days Care	Per Cent. of " Utilization
1. Babies Hospital, Country Branch	55	4,600	4,216	91%
2. Children's Aid Society **Elizabeth Milbank *Anderson Home	160	48,640	38,629	80%
3. ***Milbank Memorial Home	50	15,200	14,391	95%
4. ****Martha Home	15	4,560	4,299	94%
5. Convalescent Home for Hebrew Children	100 W. 200 S.	43,440	40,189	92%
6. Holiday Farm	50	18,250	15,300	84%
7. Josephine Home	50	18,250	16,557	91%
8. ‡Neustadter Home	58	21,170	14,885	70%
9. New York Hospital, Campbell Cottages	86	31,390	27,399	87%
10. Speedwell Society, Yonkers Unit	24	9,074	9,074	100%
11. ‡Solomon and Betty Loeb Memorial Home	108	39,420	38,189	97%
12. *****Surprise Lake Camp	50	4,895	4,287	88%

Special Convalescent Homes—Mothers with Children

Name of Home	Bed Capacity	Days Care in a Year: Maximum Days Care	Days Care in a Year: Actual Days Care	Per Cent. of " Utilization
1. A. I. C. P., Caroline Rest	117	42,705	30,429	71%

Special Convalescent Homes—Children Cardiac

Name of Home	Bed Capacity	Days Care in a Year — Maximum Days Care	Actual Days Care	Per Cent. of " Utilization
1. Irvington House	70	26,280	20,273	79%
2. Martine Farm	24	8,760	8,809	100.3%
3. Mary Zinn	41	14,565	13,680	91%
4. Nichols Cottage	6	2,282	2,234	98%
5. Pelham Home	30	10,950	9,809	90%

Special Convalescent Homes—Children Orthopaedic

Name of Home	Bed Capacity	Days Care in a Year — Maximum Days Care	Actual Days Care	Per Cent. of " Utilization
1. ******Blythedale Home	60	12,720	11,284	88%
2. Brooklyn C. A. S. Wavecrest	37 W. / 60 S.	15,921	13,131	82%
3. Robin's Nest	32	7,776	5,376	69%

NOTES:

" An average annual utilization of 90% connotes full untilization.

W. means winter capacity.

S. means summer capacity.

‡ shows a cross reference that the Home is listed under more than one type convalescent homes.

* and ****** indicates a seven months' utilization, per cent. worked out on that basis.

, * and **** indicate a ten months' utilization, per cent. worked out on that basis.

***** indicate a three months' utilization, per cent. worked out on that basis.

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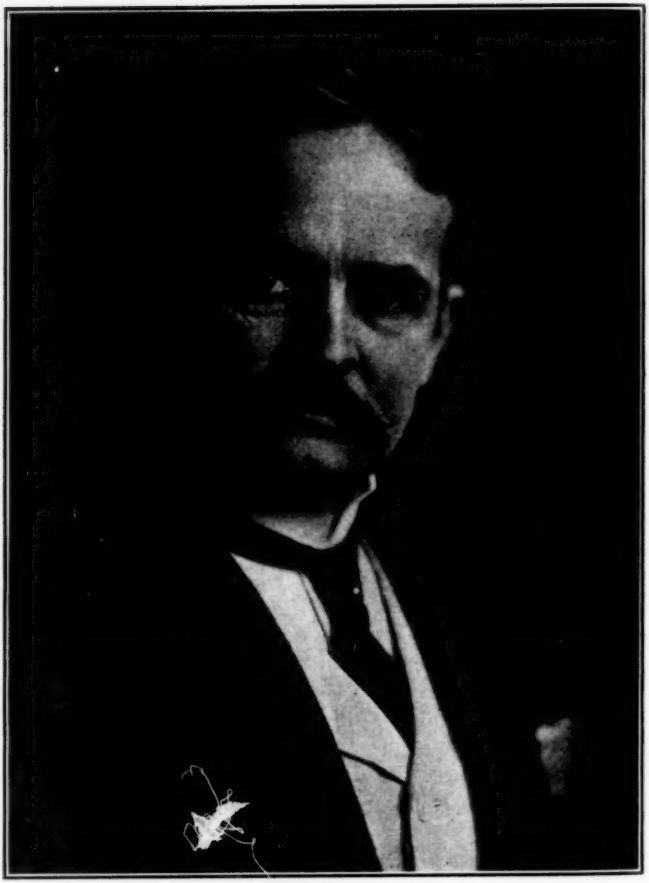
FELLOWS ELECTED MARCH 1, 1928

Frederick McKelvey Bell, M.D.....815 Park Ave.
Alice Rheinstein Bernheim, M.D.....148 West 86th St.
Austin Walter Cheever, M.D.
472 Commonwealth Ave., Boston
Angus Macdonald Frantz, M.D.....1192 Park Ave.
Virginia Kneeland Frantz, M.D.....1192 Park Ave.
Rubin Abram Gerber, M.D.....30 East 58th St.
Edwin Toal Hauser, M.D.....903 Lexington Ave.
Robert H. Hutchinson, Jr., M.D.....515 West 110th St.
Paul Klemperer, M.D.....378 Central Park West
Arthur B. McGraw, M.D.....Grosse Pointe Village, Mich.
Alexander T. Martin, M.D.....114 East 54th St.
Ben-Henry Rose, M.D.....229 E. Kingsbridge Road
Irving Simons, M.D.....30 East 40th St.
Walter Stenson, M.D.....45 East 85th St.
Percy R. Vessie, M.D.....Greenwich, Connecticut

DR. ROBERT ABBE

Dr. Robert Abbe was born on April 13, 1851, in New York City, the son of George Waldo and Charlotte Colgate Abbe. He was educated in the public schools of New York and graduated from the College of the City of New York in 1870. Prior to undertaking his medical courses he was an instructor at the College of the City of New York for two years, in drawing, English and geometry. Dr. Abbe pursued his medical studies at the College of Physicians and Surgeon in New York City and was under the preceptorship of Dr. James L. Little. He graduated in 1874, and for his thesis wrote on the Sarcina Ventriculi. After an internship at St. Luke's Hospital, Dr. Abbe took up the practice of medicine with a special leaning toward surgery, which he subsequently developed as his chosen field of work. He was a Fellow of the American Medical Association, a Fellow of the American College of Surgeons, a member of the American Physicians and Surgeons



DR. ROBERT ABBE

Society, a member of the American Surgical Society, of the International Surgical Society, the Pathological Society, the Surgical Society and he was also a member of the Society of Alumni of St. Luke's Hospital. He was attending surgeon at the Out-Patient Department of the New York Hospital and subsequently attending surgeon to the Hospital. He was also attending surgeon at St. Luke's, the New York Skin and Cancer, the New York Babies' Hospitals, and was later consulting surgeon to Woman's Hospital, the Hospital for Rupture and Crippled and Roosevelt Hospital. Dr. Abbe rendered service as a teacher of surgery at the Woman's Medical College, at the Post Graduate Medical School and Hospital and was also lecturer at the College of Physicians and Surgeons, Columbia University. Dr. Abbe was one of the first surgeons in this city to perform an intestinal anastomosis and was also one of the first to make use of radium in the treatment of cancer. He was a generous contributor to medical literature on surgical subjects, and in particular in the field of spinal surgery, abdominal surgery and malignant tumors. Dr. Abbe was elected a Fellow of the Academy in 1883 and in 1900 he delivered the Anniversary Discourse. He was vice-president of the Academy from 1906 to 1908 inclusive. Dr. Abbe died on March 7, 1928, after a lingering illness, and his passing marks the departure of one of the prominent surgeons of the past generation, whose work contributed so largely to the development of surgery in New York City.

CHARLES L. DANA.

The character and career of the late Dr. Robert Abbe have been set forth with great truth and eloquence in a tribute to him which appeared in the New York Times of March 8, 1928. One can add little to its appropriateness and verity, but a friend of his, like myself, feels the desire to express his personal reactions to Abbe's character and deeds.

Dr. Abbe had a most stimulating personality. He admired with a great deal of frankness the work, the accomplishments and social qualities of his friends. I doubt if he ever harbored any hate,—I never heard him speak unkindly of anyone. He saw all things of human interest and professional importance in a roseate light of fine approval and enjoyment. The world was a beaming spot to him. While he warmly praised and actively helped the work and aspirations of others, he also greatly enjoyed and appreciated with inoffensive charm, any modest tributes to himself. He was surgically inventive and extraordinarily skillful in his surgical technique. He was an artist in surgery and also in all forms of manipulative skill; he was a good painter and a moulder of fine sculptural work.

His activity in his later years as a maker of raised topographical maps was unique and original. To the last Dr. Abbe worked along these lines and found great comfort in what he so beautifully and usefully accomplished.

There was something different, something stimulating, euphonic and appealing in Abbe's character which ever showed itself in his helpful and hope-abounding temperament. His personality gave to his patients as much help as his surgery—a thing of a masterly grade.

It would be a most pleasing thing to him if he could now know that his friends and his public consider him worthy of an *"eternum decus in stellis"* by reason of his inspiring personality, of the purity and sanity of his life, and on account of the practical accomplishments, human and technical, of his long and busy career.

DEATH NOTICE

MAX GUSTAV SCHLAPP, M.D., 121 East 60th Street, New York City; graduated in medicine from Berlin University, Berlin, Germany, in 1896; elected a Fellow of the Academy, April 7, 1904; died, March 5, 1928. Dr. Schlapp was a Fellow of the American Medical Association, a member of the American Pathological and Bacteriological Society, the Neurological Society, the Pathological Society, and the Neuro-Pathological Society, Post Graduate Hospital.